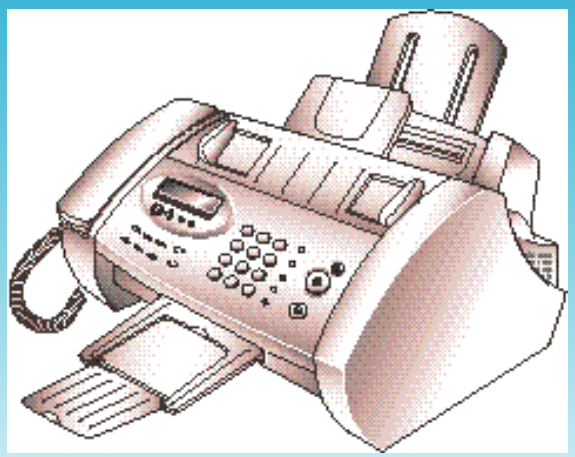
SAMSUNG FACSIMILE

SF3000/SF3000T

SERVICE *Manual*

FACSIMILE



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1. Precautions

Follow these safety, ESD, and servicing precautions to prevent personal injury and equipment damage.

1-1. Safety Precautions

1. Be sure that all built-in protective devices are in place. Restore any missing protective shields.

2. Make sure there are no cabinet openings through which people- particularly children- might insert fingers or objects and contact dangerous voltages.

3. When re-installing chassis and assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

4. Design Alteration Warning:
   Never alter or add to the mechanical or electrical design of this equipment, such as auxiliary connectors, etc. Such alterations and modifications will void the manufacturer's warranty.

5. Components, parts, and wiring that appear to have overheated or are otherwise damaged should be replaced with parts which meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.

6. Observe the original lead dress, especially near sharp edges, AC, and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board.

7. Product Safety Notice:
   Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they provide could be lost if a replacement component differs from the original. This holds true, even though the replacement may be rated for higher voltage, wattage, etc.

   Components critical for safety are indicated in the parts list with symbols . Use only replacement components that have the same ratings, especially for flame resistance and dielectric specifications. A replacement part that does not have the same safety characteristics as the original may create shock, fire, or other safety hazards.

1-2. ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called “Electrostatically Sensitive (ES) Devices”, or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor “chip” components.
The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, *which should be removed for your personal safety reasons prior to applying power to the unit under test.*

2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.

3. Use only a grounded tip soldering iron to solder or desolder ESDs.

4. Use only an “anti-static” solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.

5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.

6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.

7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.

9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one’s foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

1-3. Lithium Battery Precautions

1. Exercise caution when replacing a Lithium battery. There could be a danger of explosion and subsequent operator injury and / or equipment damage if incorrectly installed.

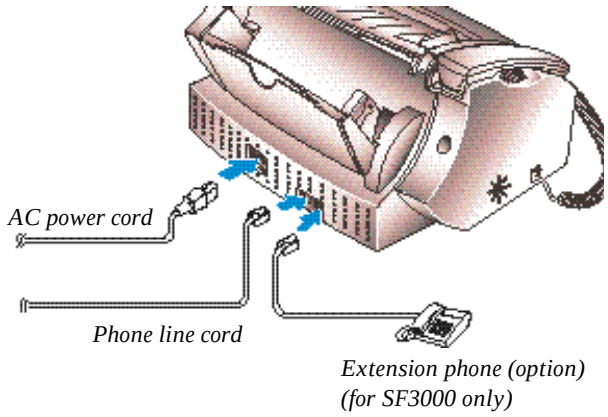
2. Be sure to replace the battery with the same or equivalent type recommended by the manufacturer.

3. Lithium batteries contain toxic substances and should not be opened, crushed, or burned for disposal.

3. Installation

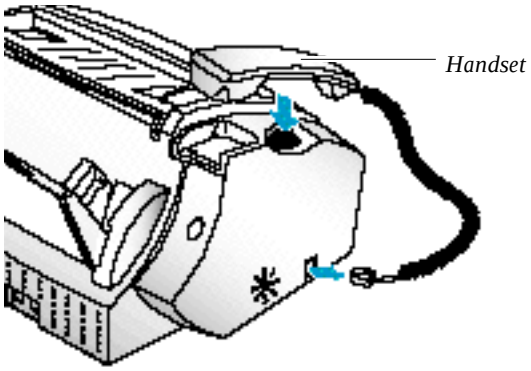
3-1. Connections

3-1-1. Connection Diagram



3-1-2. Handset

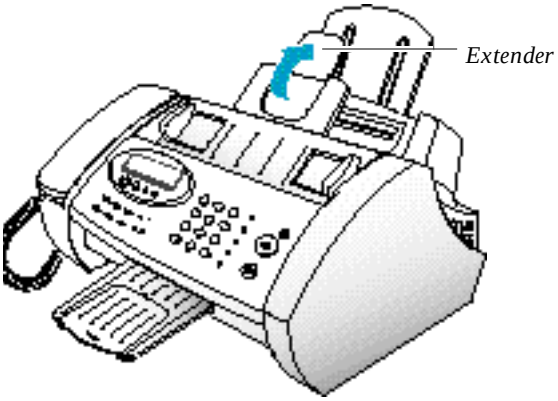
Plug one end of the coiled cord into the jack on the handset, the other end into the modular jack on the left side of the machine.



3-1-3. Document Tray

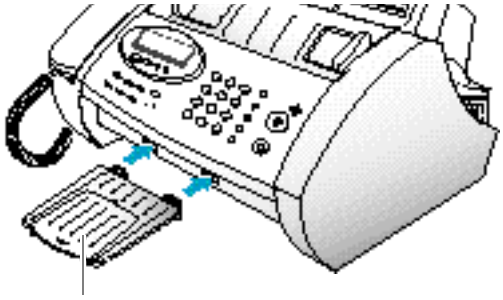
1. Insert the two tabs on the document tray into the slot on top of your machine.

2. Fold out the extender on the document tray, if necessary.



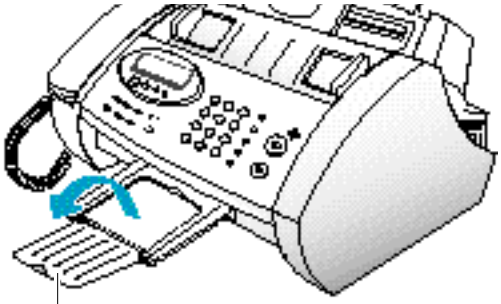
3-1-4 Document Exit Tray

1. Insert the two tabs on the document exit tray into the slots on the front of your machine.



Document exit tray

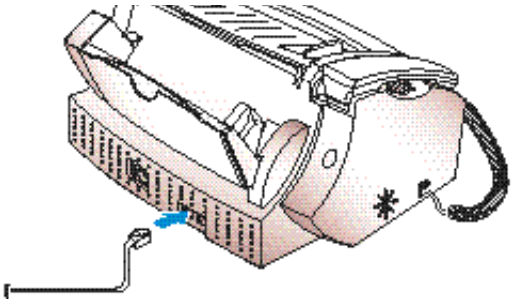
2. Fold out the extender, if necessary.



Extender

3-1-5. Telephone Line

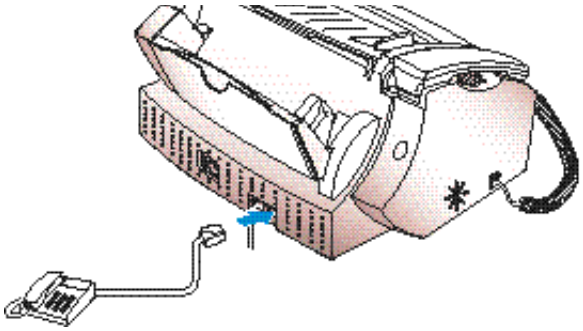
Plug one end of the telephone line cord into the TEL. LINE jack,the other end into a standard phone wall jack.



3-1-6. Extension Phone (Optional)

(SF3000 only)

Plug one end of the cord of your extension phone into the TAM lead and the plug of the TAM lead into the socket marked EXT. LINE on the back of the machine.



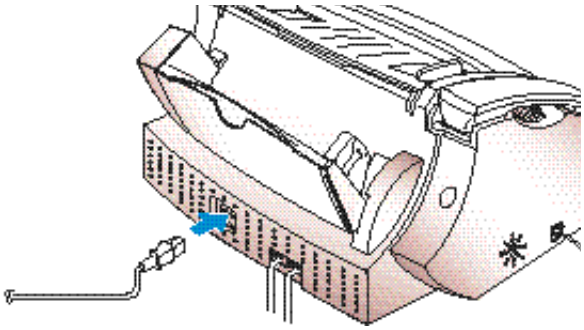
3-1-7. AC Power Cord

Plug one end of the cord into the back of the machine, and the other into a standard, grounded 3-pin AC socket (220 - 240 V, 50 - 60 Hz).

The machine turns on and the LCD displays 'SYSTEM INITIAL..'. If there is no cartrige installed, or no paper, the display shows 'NO CARTRIDGE' or 'PAPER EMPTY'.

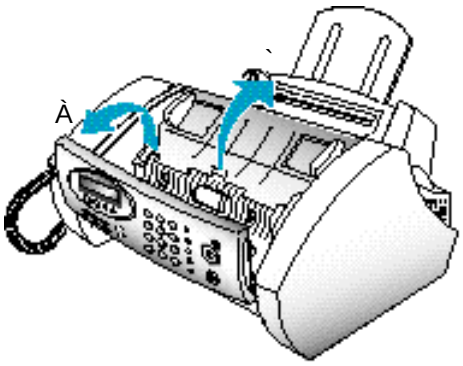
To turn the machine off, unplug the power cord.

Note: If documents are deleted from memory due to a power failure, the machine automatically prints out a Power Failure report when power is reapplied.



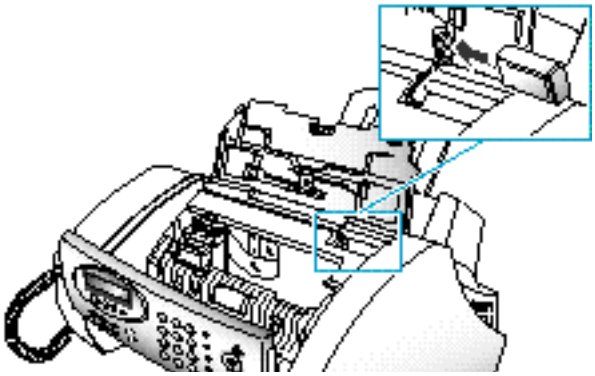
3-1-8. Backup Battery (SF3000T only)

1. Lift the control panel À and open the cartridge compartment cover ` .



2. Remove the old battery, if necessary.

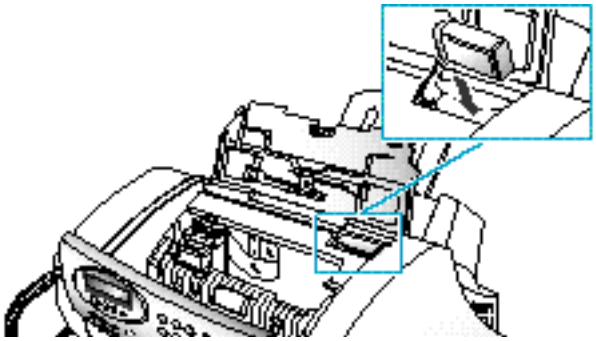
   Connect the new battery to the clips.



3. Insert the battery into the battery slot.

   The battery maintains setup configuration and messages when a power failure occurs or when power is accidentally disconnected.

   We recommend you use an alkaline battery because it lasts longer than a conventional battery.



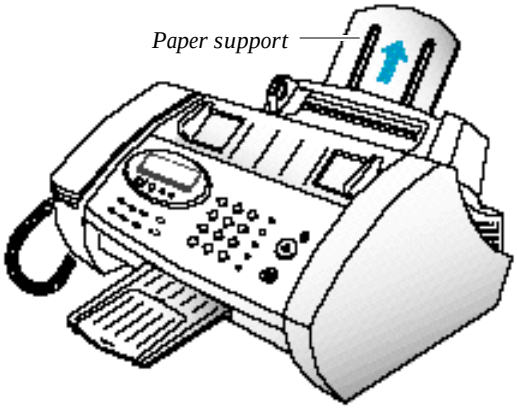
4. Close the cartridge compartment cover, and close the control panel.

   The battery can maintain the internal memory for about 20 hours. If the backup battery is weak or missing, the LCD displays a warning message.

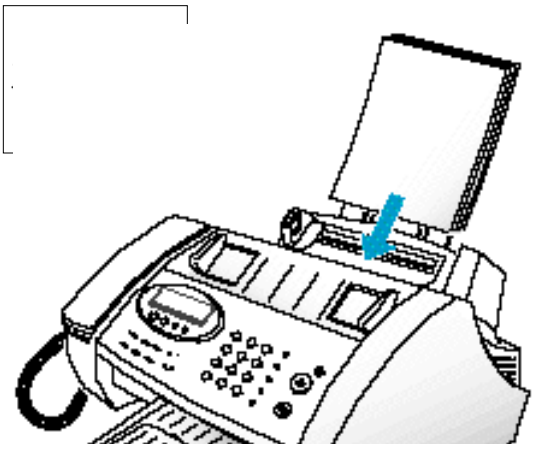
3-2. Loading Paper

The display shows 'PAPER EMPTY' when paper is not loaded. You can load approximately 100 sheets of paper.

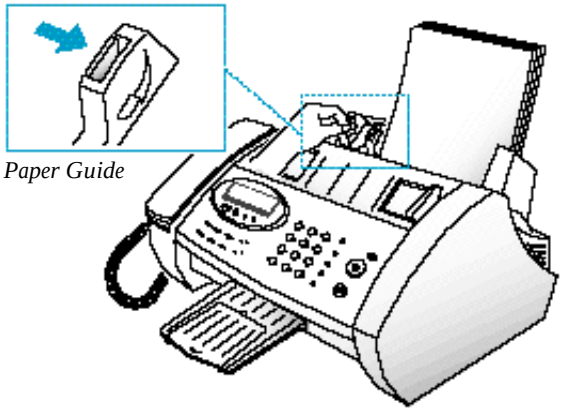
1. Pull the paper support on the paper bin all the way up.



2. Fan and insert the paper, with the printing side facing you.



3. Squeeze the left paper guide and move it to the right to match the width of the paper.

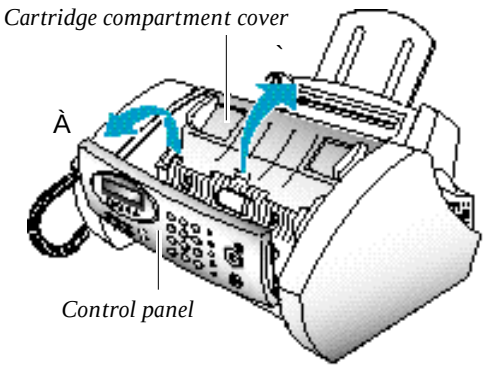


Note: The machine is preset to load A4-size paper. To load letter or legal-size paper, you have to set 'PAPER SIZE' option to the desired size.

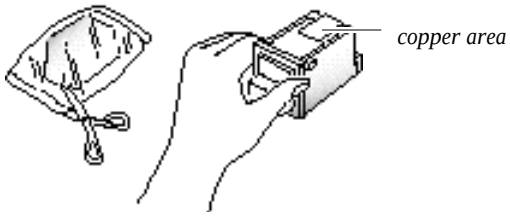
3-3. Installing Print Cartridge

When the machine is powered up without the print cartridge installed, the LCD displays 'NO CARTRIDGE '.

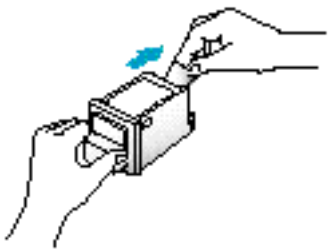
1. Press Menu.
2. Press ▲ or ▼ until '1.CHANGE CART.' is displayed, then press Start/Copy.
3. Lift the control panel À, and open the cartridge compartment cover ` .



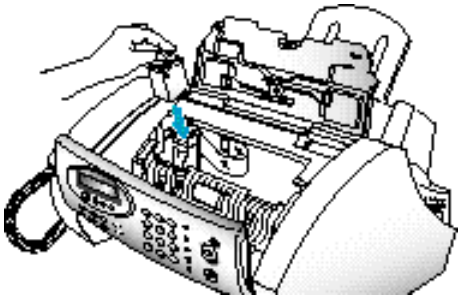
4. Remove the new print cartridge from its packaging. Hold by the black areas or colored top only. Do not touch the copper area.



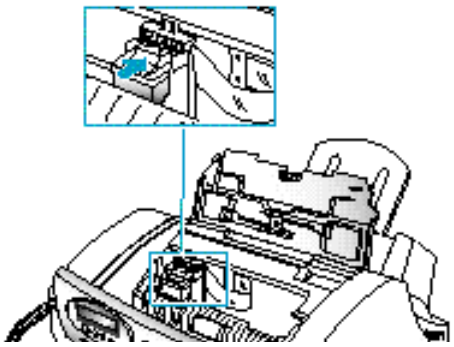
5. Carefully remove the tape covering the printhead. Be sure to remove all the tape.



6. Insert the print cartridge in the carrier.



7. Push the cartridge firmly in the direction of the arrow until it clicks into place.



8. After installing the print cartridge, close the cover and replace the control panel.
9. The display shows ':NEW :USED.' Press Start/Copy to confirm 'NEW'. (For used cartridge, press ▲ or ▼ then press Start/Copy.) The display briefly shows 'MONO INSTALLED.'

   If the cartridge is not installed properly, 'NO CARTRIDGE' is displayed. Remove the cartridge and re-insert it.
10. The display asks if you want to run a SELF TEST. Press Start/Copy to run the printer self test.

    If you press Stop, the machine returns to Standby mode.
11. The machine prints out a test pattern of the printer.

Memo

6. Disassembly and Reassembly

6-1. General Precautions on Disassembly

When disassemble and reassembling components, use extreme caution. The close proximity of cables to moving parts makes proper routing a must. If components are removed or replaced, any cables disturbed by the procedure must be replaced as close as possible to their original positions. Before removing any component from the machine, note the cable routing that will be affected.

Whenever servicing the machine, you must perform the following:

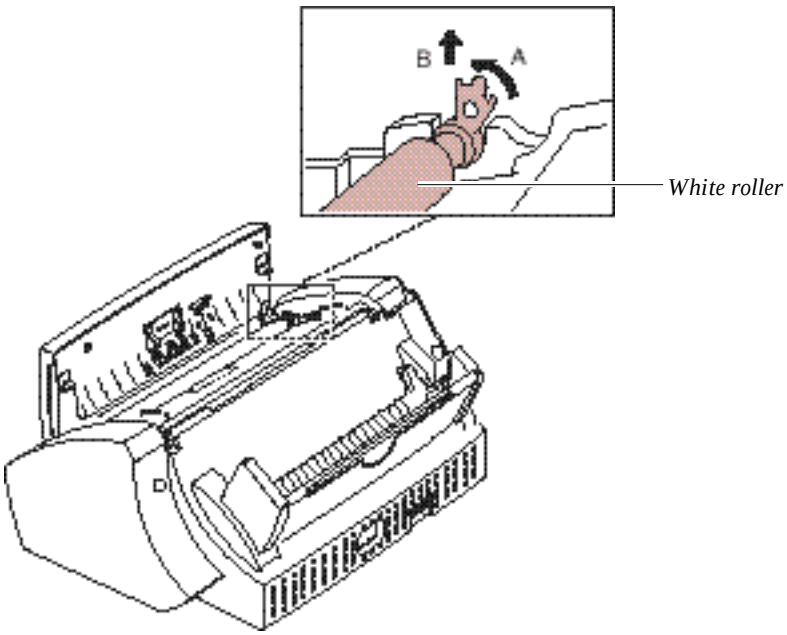
1. Check that documents are not stored in memory.
2. Remove the print cartridge.
3. Unplug the power cord.
4. Work on a flat and clean surface.
5. Replace only with authorized components.
6. Do not force plastic components.
7. Make sure all components are in their proper position.

6-2. White Roller

1. Lift the control panel.

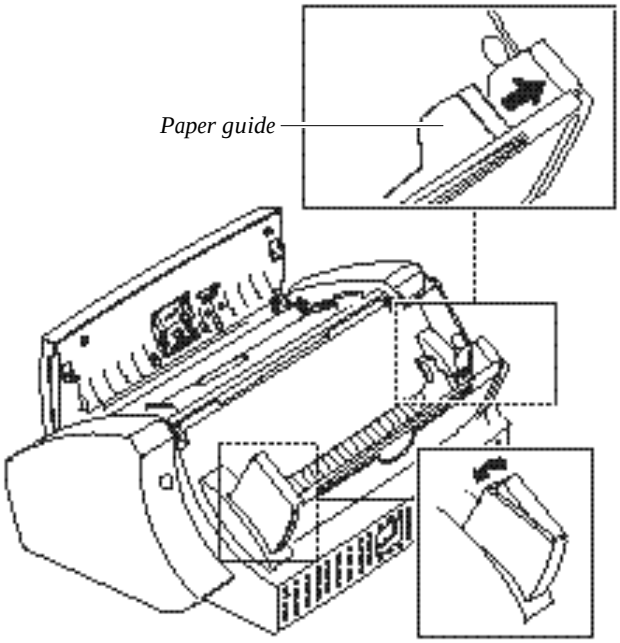
2. Push the white clip on each end of the roller slightly inward, then rotate it until it reaches the slot, as shown below. Then lift the roller out.

Note : Check the roller for dirt. If dirty, wipe it off with soft cloth dampened with water. If the roller is heavily worn, replace it with a new one.

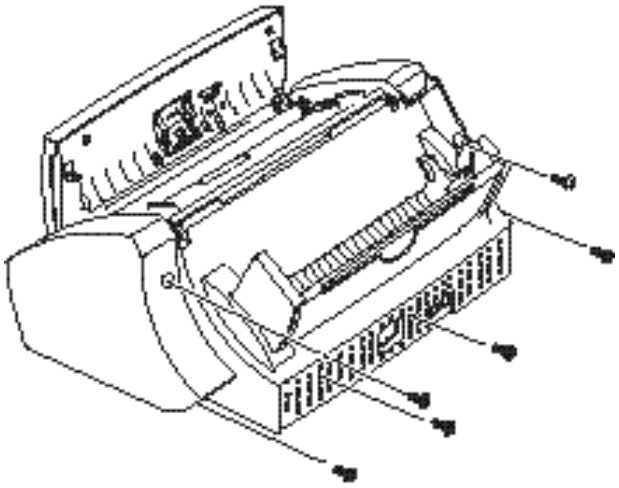


6-3. Rear Cover

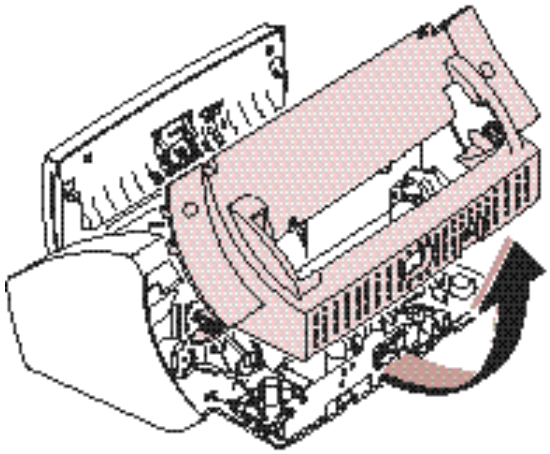
1. Holding the paper guide, move it in the direction of arrow.



2. Remove the six screws, as shown below.



3. Holding the rear cover ass'y, take it out by rotating it to release properly.

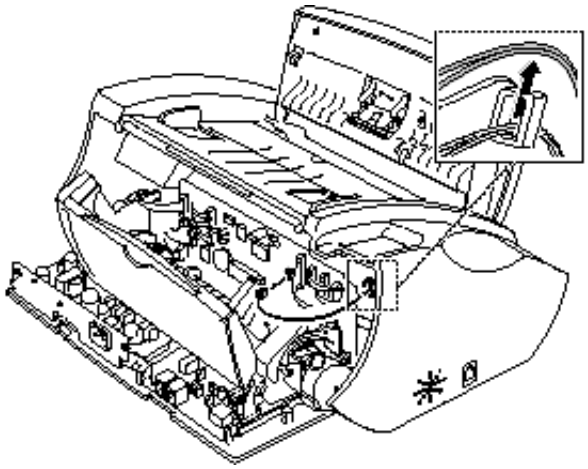


6-4. Top Cover and Speaker

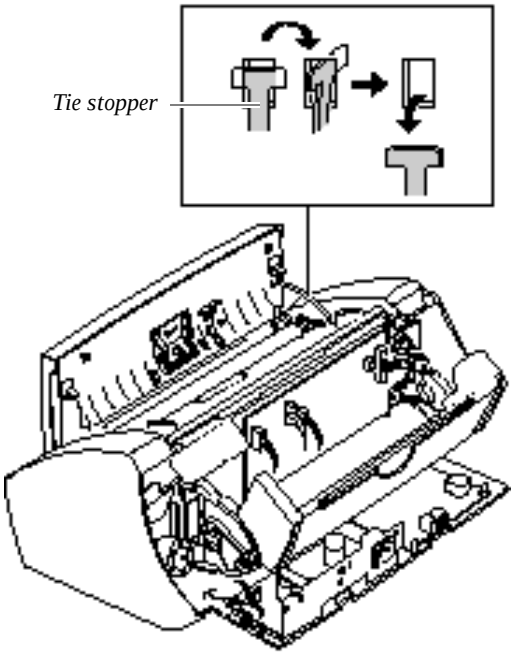
1. Before you disassemble the top cover, you should remove:

   – Rear Cover (see page 6-2)

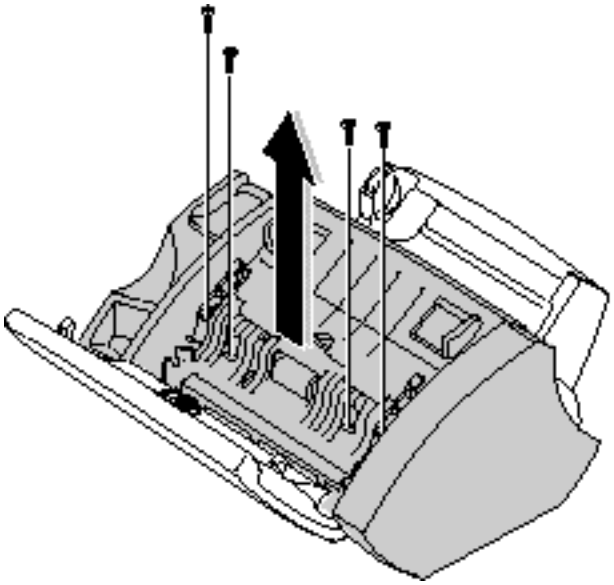
2. Remove the handset, and unplug the connector from the main board.



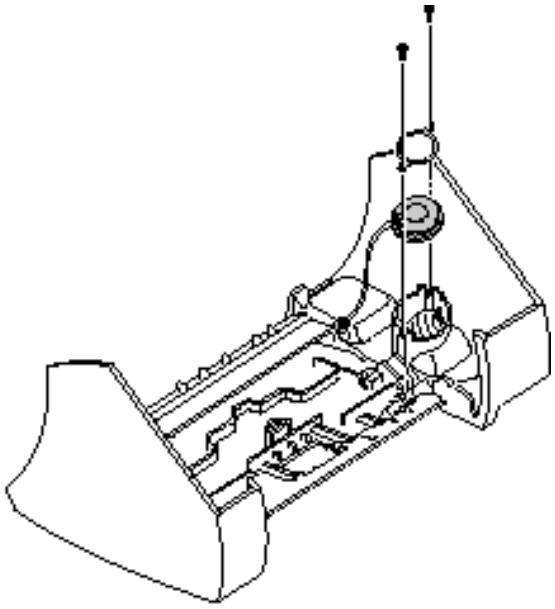
3. Release the tie stopper supporting the control panel.



4. Remove the four screws securing the cover.



5. If you want to remove the speaker, turn the top cover over, and remove the two screws securing it.

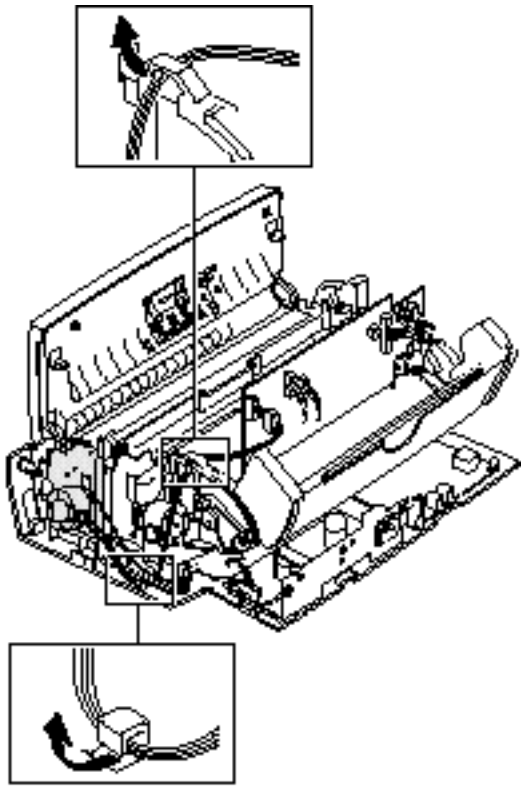


6-5. Scan Motor

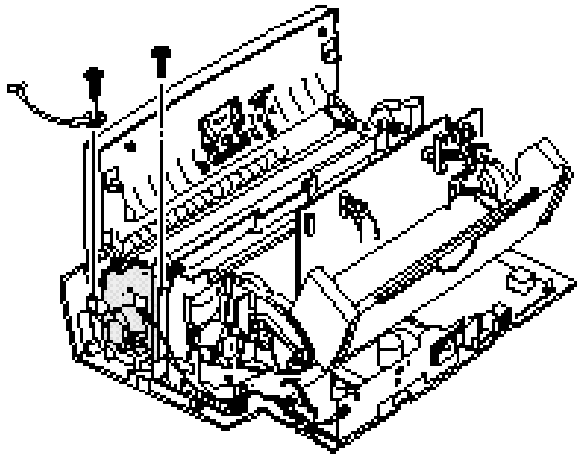
1. Before disassembling the scan motor, you should remove:

   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)

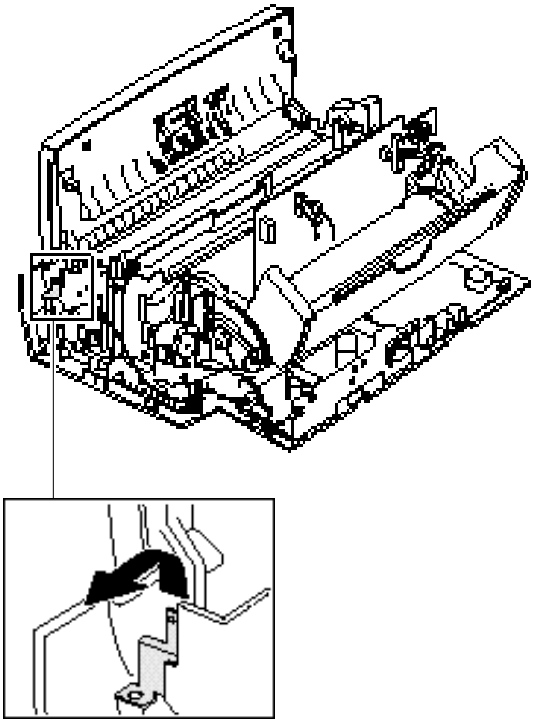
2. Unplug the motor connector from the main board. Make sure the harness is released from the two hooks, as shown below.



3. Remove the two screws as shown below.

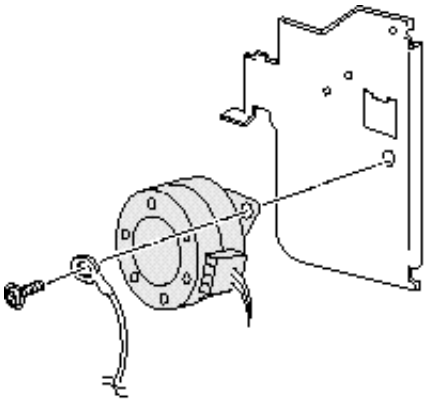


4. Remove the ground plate.



Ground plate

5. Remove the ground screw securing the motor to the motor bracket.

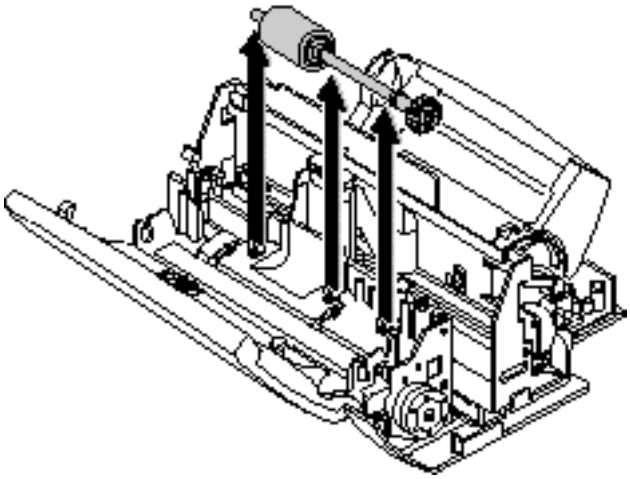


6-6. ADF Roller and Contact Image Sensor (CIS)

1. Before disassembling the roller and CIS, you should remove:

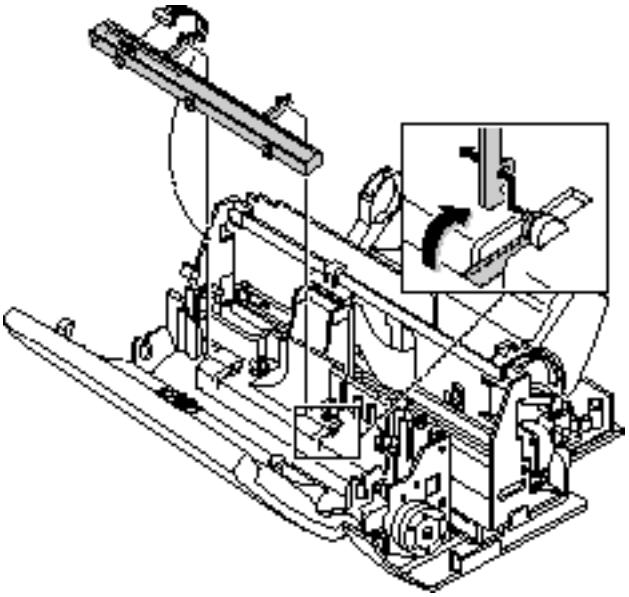
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)

2. Remove the ADF roller. When you assemble the roller, make sure it is properly hooked.

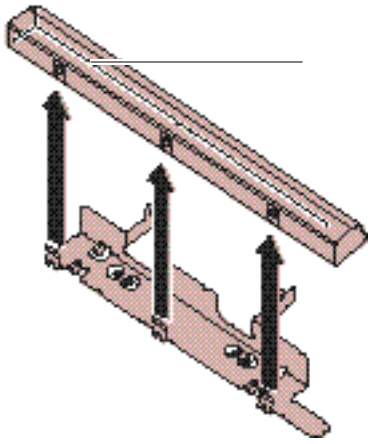


Note : Clean the surface of the roller with ethyl alcohol. After wiping it, you must dry it completely.

3. Unplug the CIS harness, then remove the CIS ass'y. To remove the CIS ass'y, turn it up and slide the two legs far left, and pull it up.



4. Remove the CIS from the bracket.



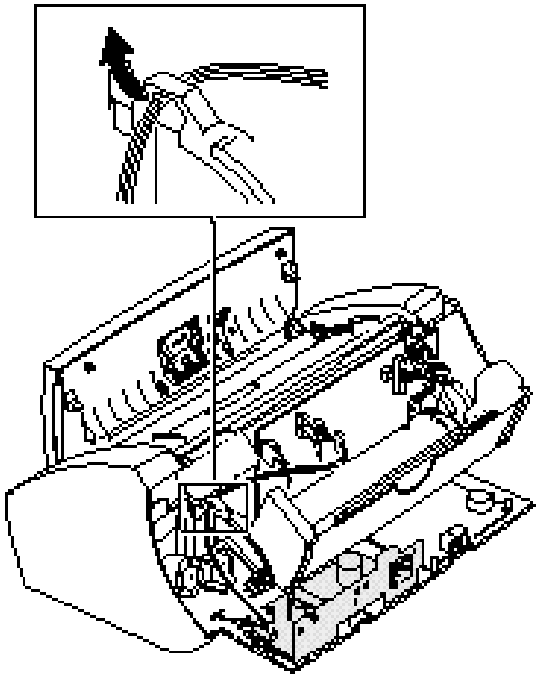
Note: Check the glassy surface of the CIS for stains or scratches. If stained, wipe off with ethyl alcohol. If it is heavily scratched, replace it with a new one.

6-7. SMPS

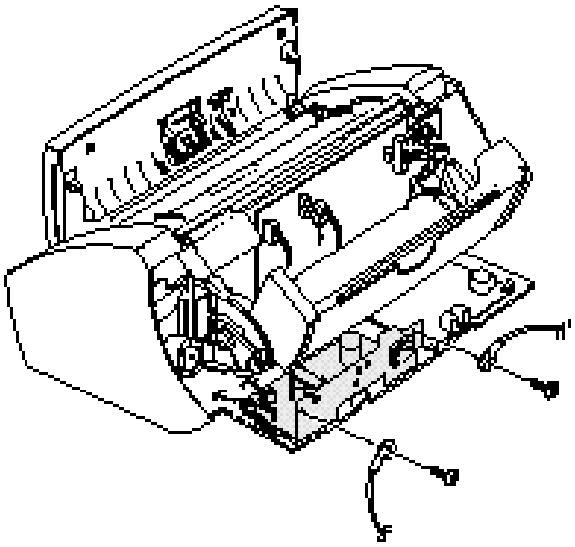
1. Before disassembling the SMPS, you should remove:

   – Rear Cover (see page 6-2)

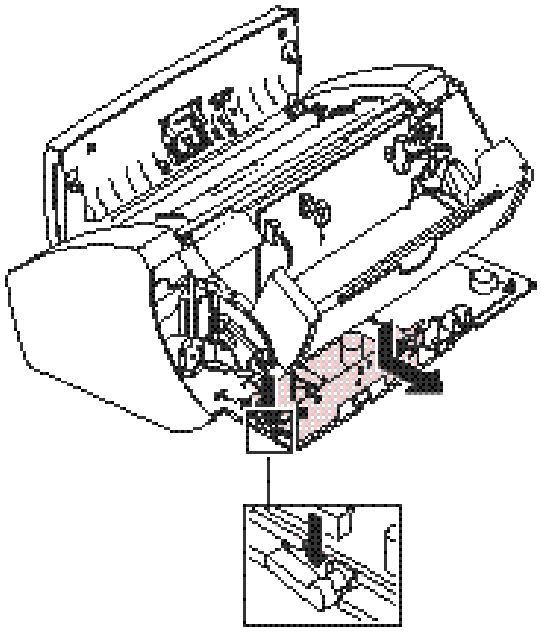
2. Unplug the SMPS connector from the main board. Make sure the harness is released from the hook.



3. Remove the two ground screws from the bracket, as shown.



4. Pushing down the hook, as shown in the inset, remove the SMPS.

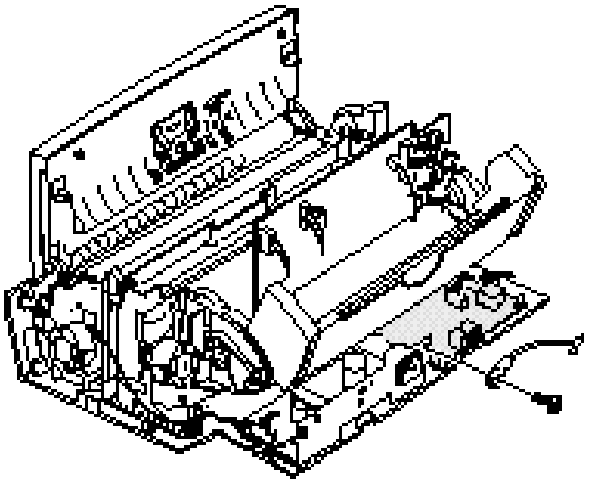


6-8. LIU Board

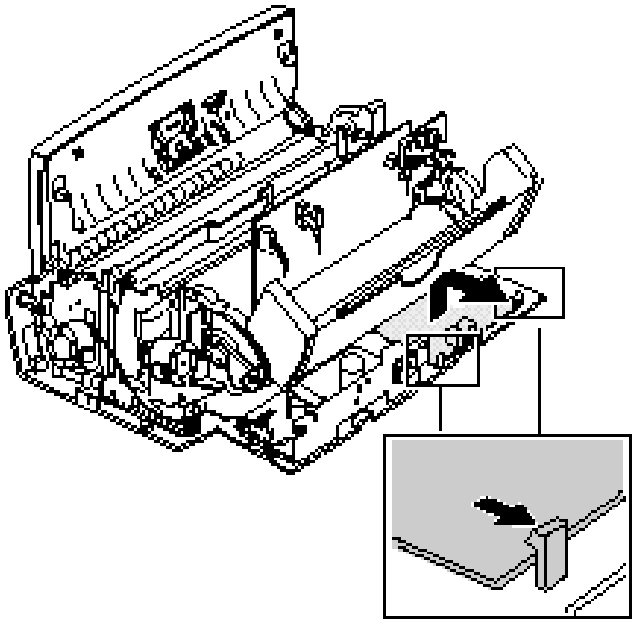
1. Before disassembling the board, you should remove:

   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)

2. Remove the screw securing the ground wires to the SMPS bracket.

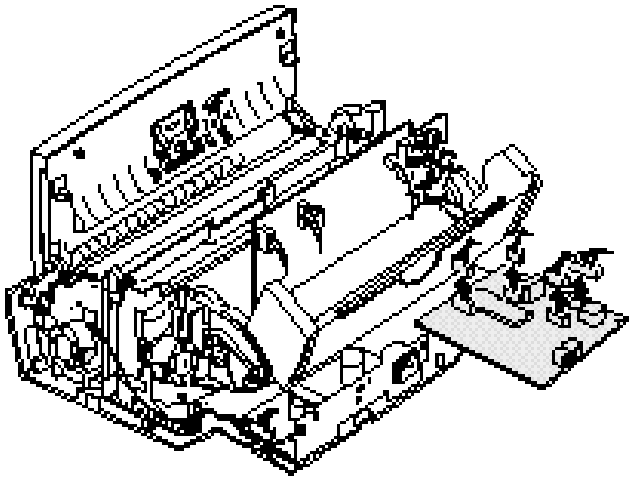


3. Pulling the snaps locking the board outward, remove the board.



Snap fit

4. Unplug all the connectors from the board.



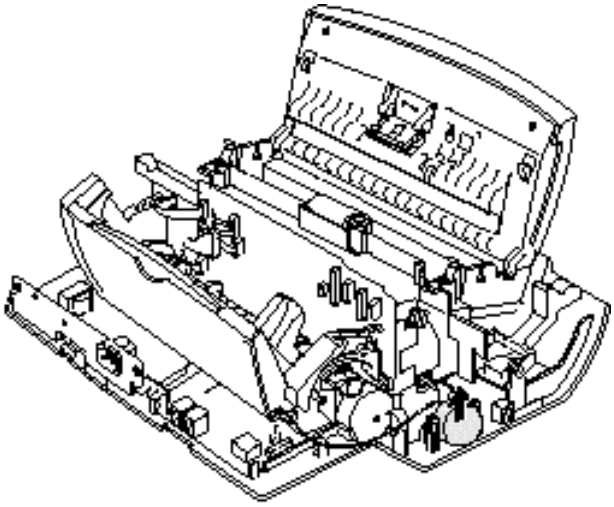
6-9. Buzzer and Hook Board

6-9-1. Buzzer

1. Before disassembling the buzzer, you should remove:

   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)

2. Unplug the connector from the LIU board, and remove the buzzer.

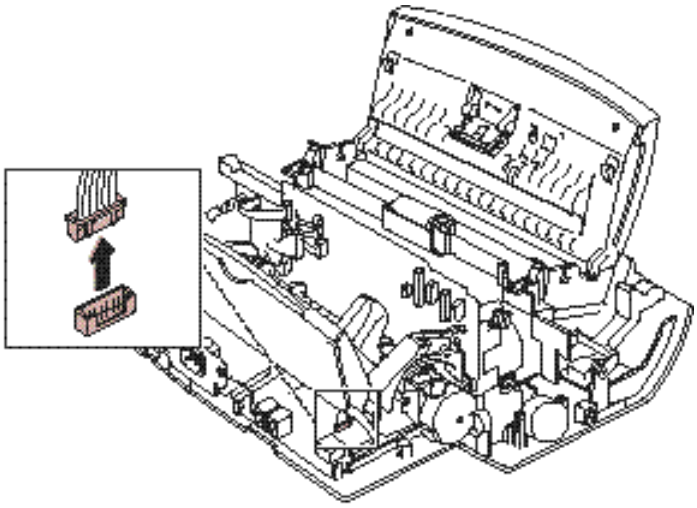


6-9-2. Hook Board

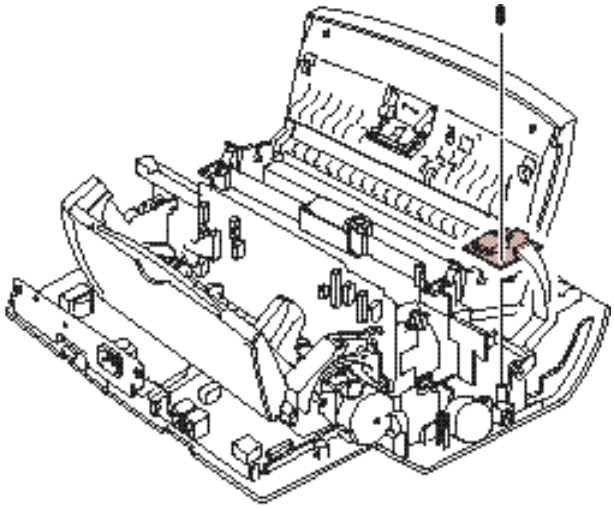
1. Before disassembling the board, you should remove:

   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)

2. Unplug the connector from the LIU board.



3. Remove the screw, then remove the board.

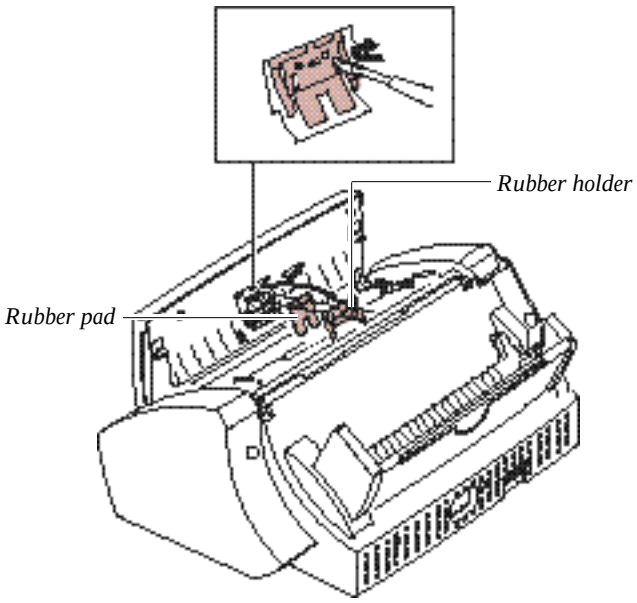


6-10. OPE Unit

6-10-1. ADF Rubber Pad

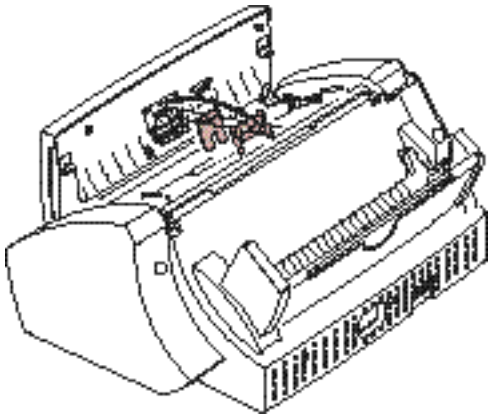
1. Open the control panel.

2. Insert a flat blade screw driver into the slot as shown below, and remove the rubber holder and the rubber pad.



Notes:

- When reassembling the rubber pad, be sure that it and the holder fit into the guide boss and the holder latches fit into the corresponding hole. Then push firmly until it clicks.



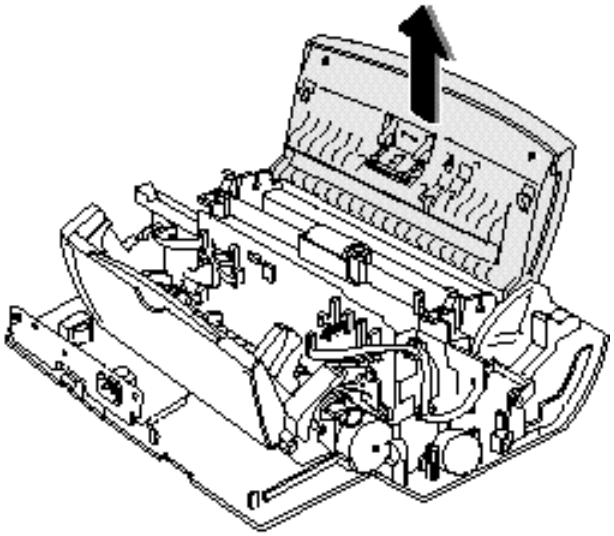
- Clean the surface of the rubber pad with ethyl alcohol. After wiping, be sure to dry it. Check for rubber wear. If the wear reaches 1/2 its original thickness, replace it with a new one.

6-10-2. OPE Unit

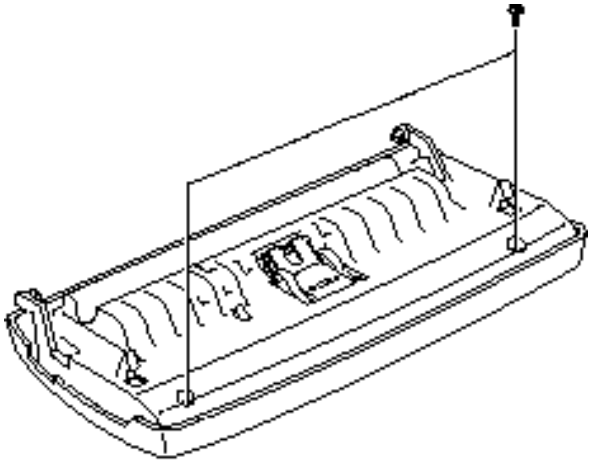
1. Before disassembling the OPE unit, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)
   – LIU Board (see page 6-7)

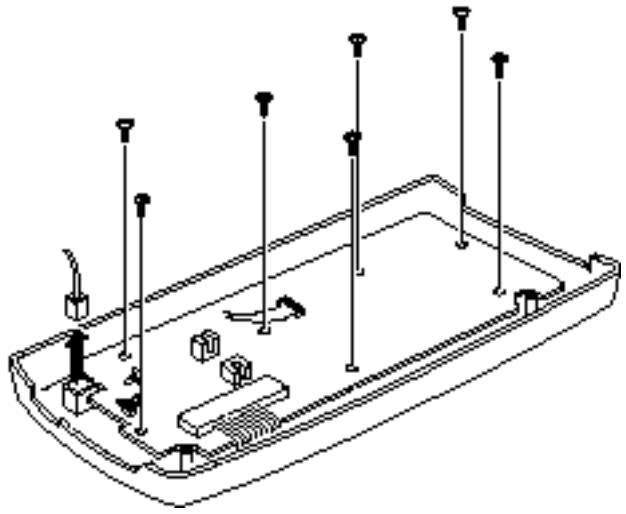
2. Unplug the connector from the main board, and pull up the OPE unit.



3. Remove the two screws and remove the cover.



4. Remove the microphone (SF3000T only) and the seven screws.

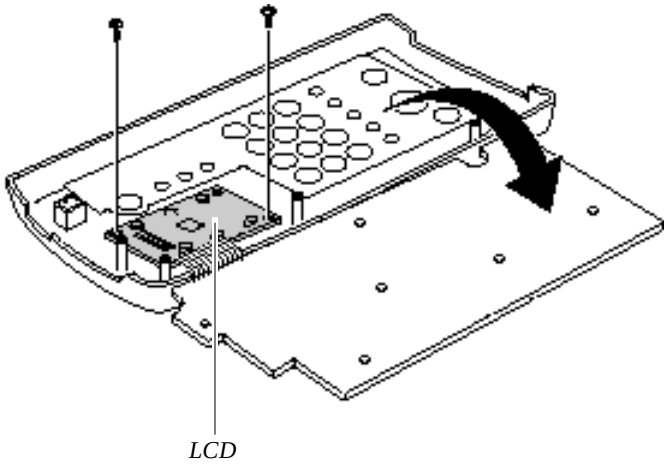


Microphone
(SF3000T only)

Notes:

- Do not turn the OPE unit upside down after you remove the screws securing the board. Keys and rubber contacts may be separated and easily lost.
- When reassembling the OPE unit, make sure the keys are in correct position.
- When reassembling the board, secure the screws according to the order printed on the PBA.
- After reassembling, operate the machine to make sure it works properly.
- After reassembling, make sure the LCD is not blocked.

5. Remove the OPE board. Then remove the two screws from the LCD and remove the LCD.



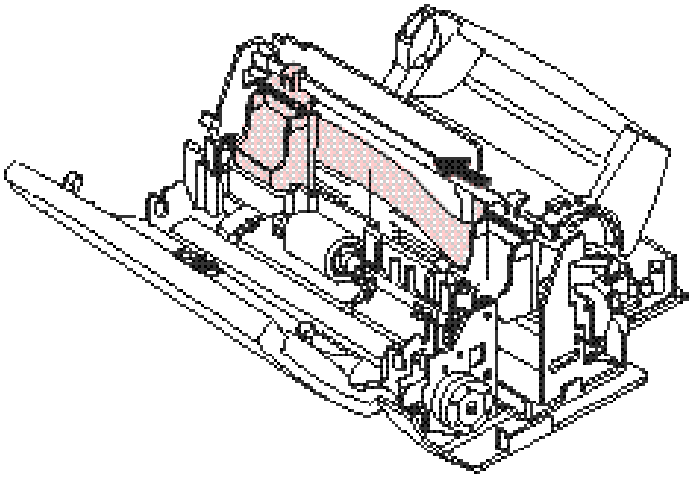
LCD

6-11. Printer Unit

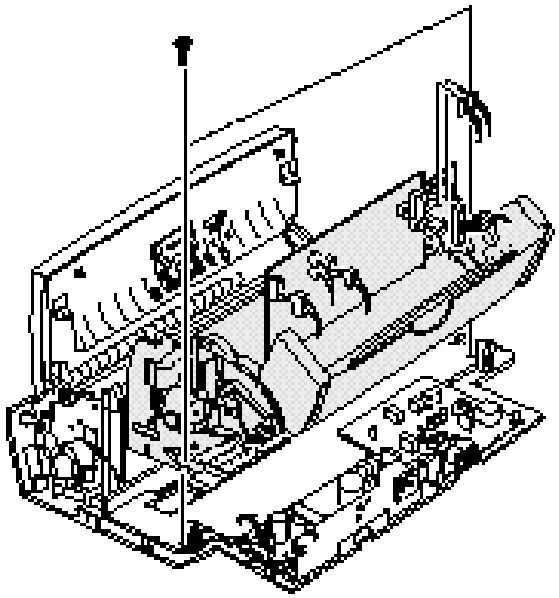
1. Before disassembling the printer unit, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)

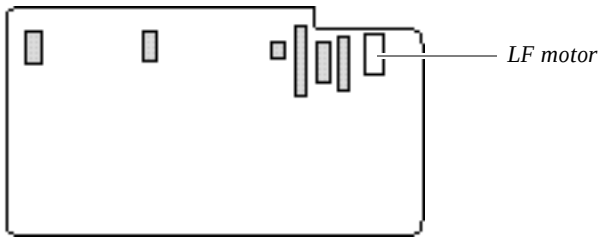
2. Slide the cartridge carrier, as shown below.



3. Remove the two screws securing the printer unit, and unplug the six connectors from the main board.



The connectors are located as shown below. It is not necessary to unplug the LF motor connector to remove the printer unit.



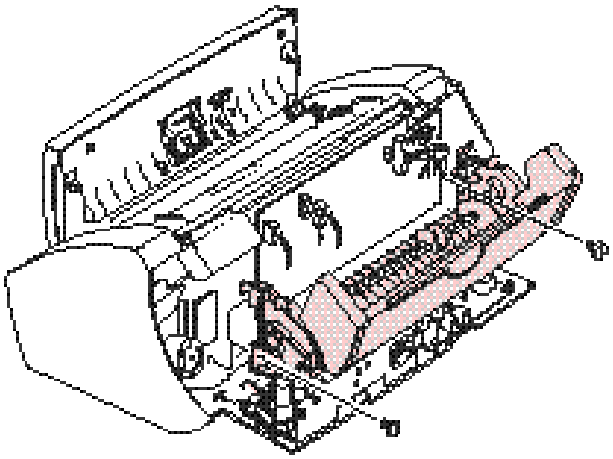
4. Remove the printer unit. When you pull up printer unit, be careful to properly release the harnesses.

6-12. ASF Feeder

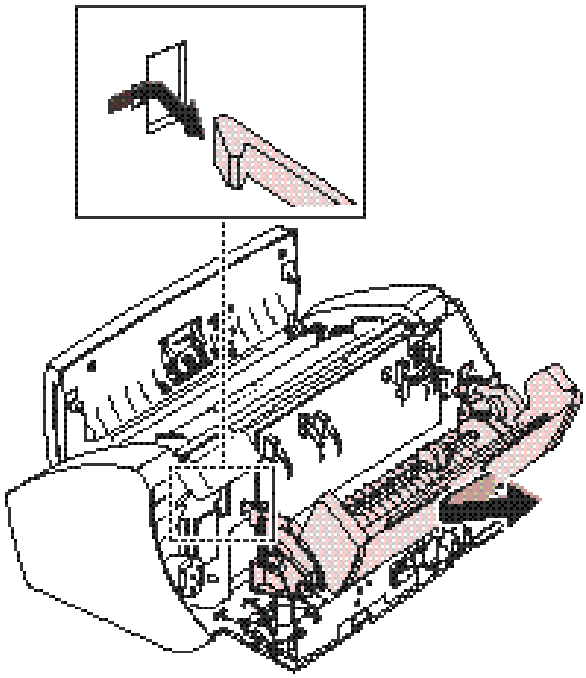
1. Before disassembling the ASF feeder ass'y, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)

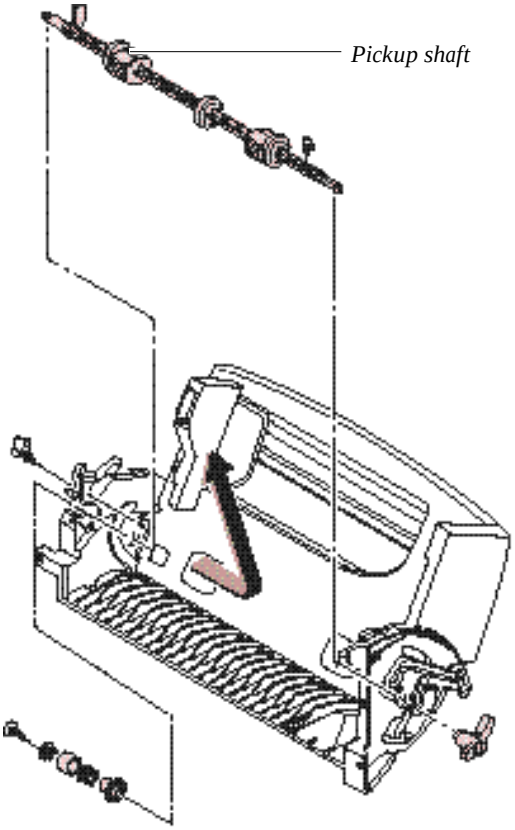
2. Remove the two screws securing the ASF feeder.



3. Unlock the ASF feeder assembly, and remove it.



4. Remove the screw securing the pickup shaft. To remove the pickup shaft, pull it to the far right and take it out.



Note : When reassembling the ASF feeder ass'y, insure the harness for the line feed motor is not pinched or shorted.

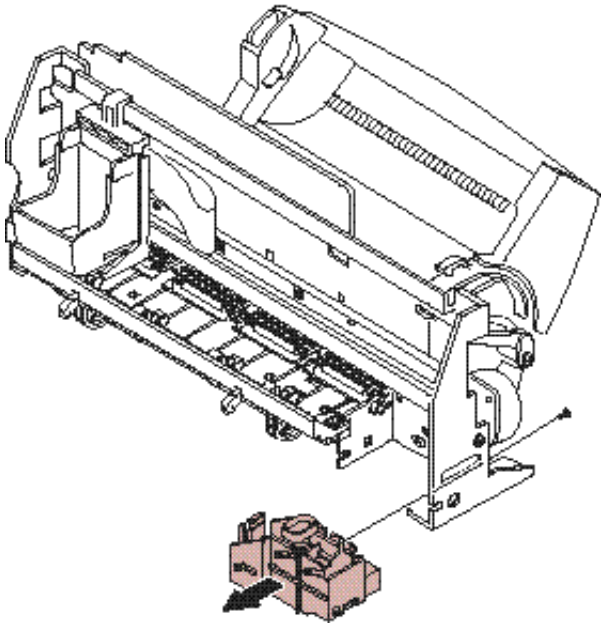
6-13. Printer Unit Miscellaneous

6-13-1. Cartridge Carrier Home Assembly

1. Before disassembling the cartridge carrier home, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)
   – Printer Unit (see page 6-11)

2. Remove the screw securing the cartridge carrier home, and take it out.

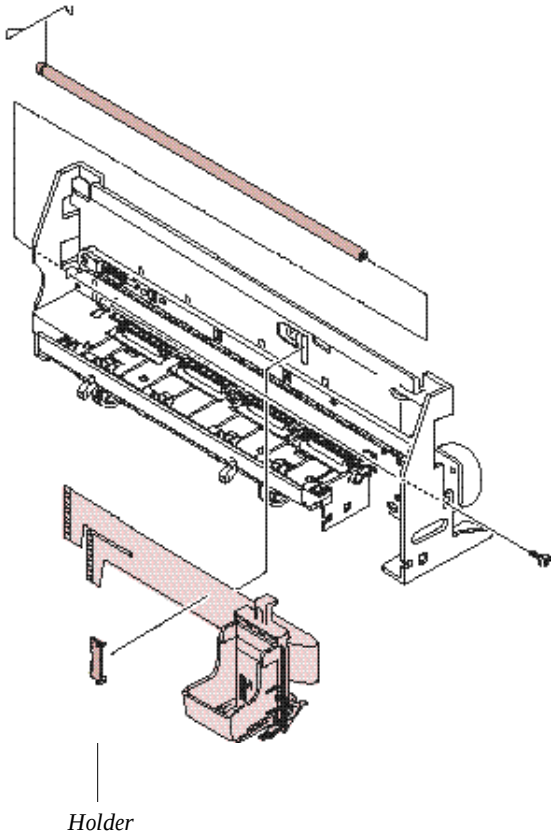


6-13-2. Cartridge Carrier Assembly

1. Before disassembling the cartridge carrier assembly, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)
   – Printer Unit (see page 6-11)
   – Cartridge Carrier Home Assembly (see page left)
   – ASF Feeder (see page 6-12)
   – Main Board (see page 6-15)

2. Remove the cable holder, and remove the screw on the right side of the frame.



Holder

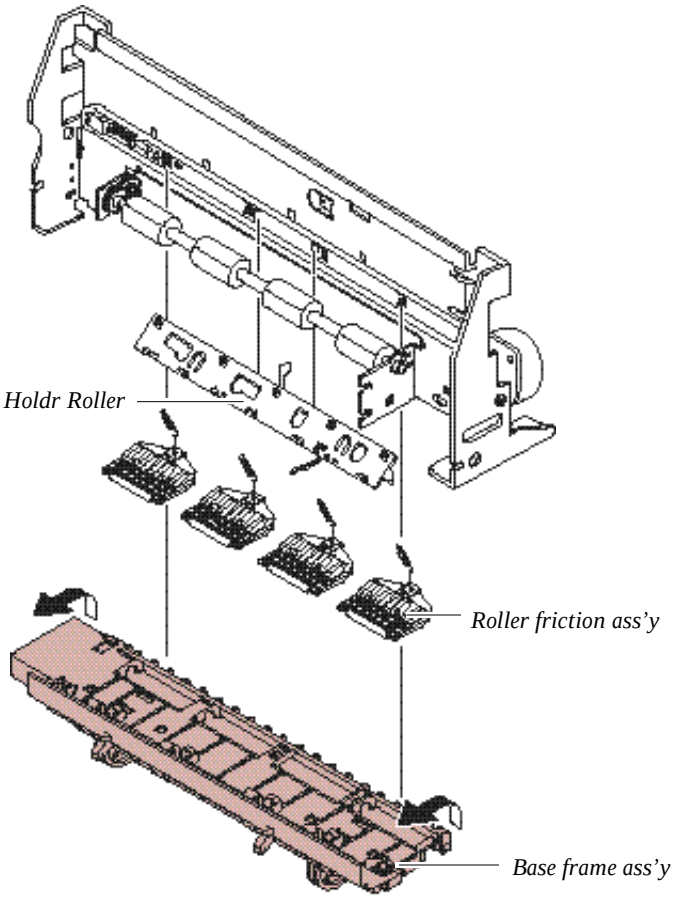
6-13-3. Base Frame Assembly

1. Before disassembling the base frame assembly, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)
   – Printer Unit (see page 6-11)
   – Cartridge Carrier Home Assembly (see page 6-13)
   – Cartridge Carrier Assembly (see page 6-13)
   – ASF Feeder (see page 6-12)
   – Main Board (see page 6-15)

2. Remove the roller friction assemblies, then the actuator feed.

3. Remove the base frame assembly.

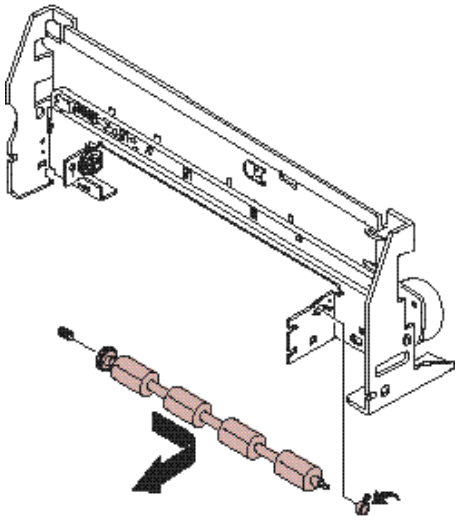


6-13-4. Feed Roller Assembly and Line Feeder Bracket Assembly

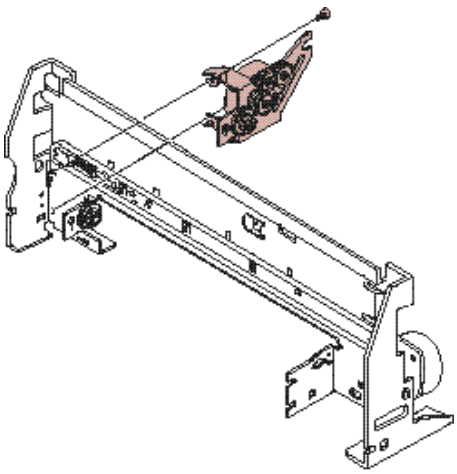
1. Before disassembling the feeder roller ass'y, and / or the line feed bracket ass'y, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)
   – Printer Unit (see page 6-11)
   – Cartridge Carrier Home Assembly (see page 6-13)
   – Cartridge Carrier Assembly (see page 6-13)
   – Base Frame Assembly (see page left)

2. Remove the feed bearing from the main frame. Pull the feeder roller in the direction of arrow, and take it out.



3. Remove the two screws, then remove the feeder bracket assembly.

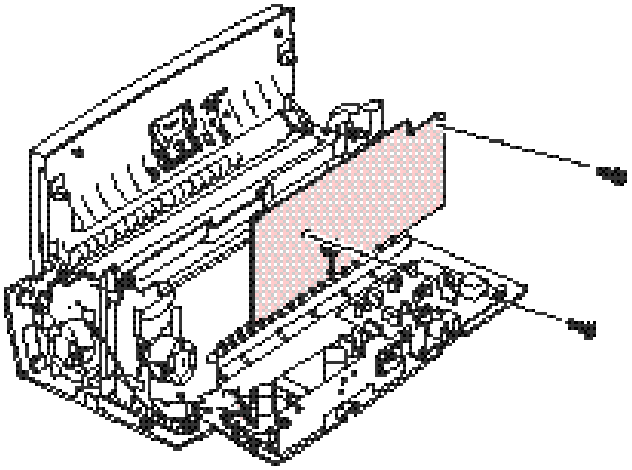


6-14. Main Board

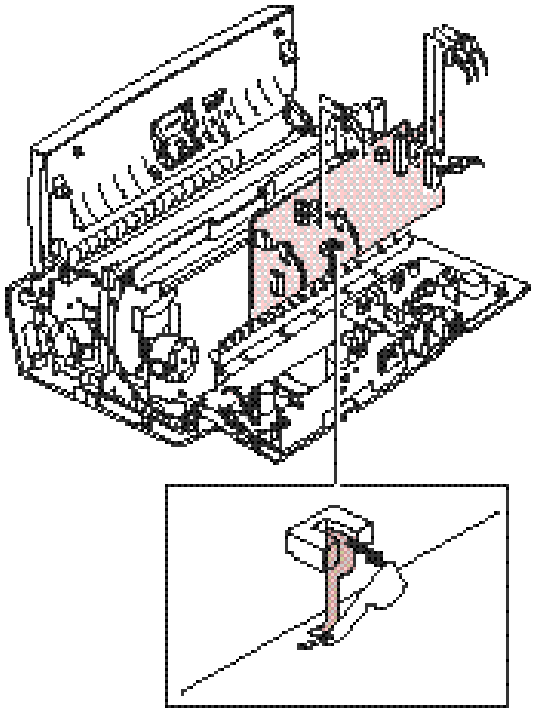
1. Before disassembling the main board, you should remove:

   – Dummy ASF (see page 6-2)
   – Rear Cover (see page 6-2)
   – Top Cover (see page 6-3)
   – ASF Feeder (see page 6-12)

2. Remove the two screws securing the main board.



3. Unplug all connectors from the main board. Then, pull the sensor lever towards you and remove the main board.



Sensor lever

Memo

5. Circuit Description

5-1. General

The main circuit board consists of a Jupiter-2 Chip (KS32C6500), memory, TX- and RX-related circuitry, and some portions of the Line interface Unit, and controls the system.

5-2. System Control Part

This circuit consists of the EP-ROM and SRAM, External Real Time Clock crystal, RTC and memory back-up, and the Jupiter-2 Chip (KS32C6500). The Jupiter-2 Chip is an integrated 14400bps modem, image processor, 16-bit MPU, peripheral control, and analog front end circuit on a single-chip.

The modem is 14400 bps half duplex. It is a monolithic device incorporating an over sampling ΣΔ AFE, digital filters, a digital signal processor (SDIP4) and CPU-Interface logic.

5-2-1. Memory Map

The external memory of the CPU is divided into 32kB RAM (0000H through 7FFFH), 512kB ROM (FC0000H through FFFFFFH) and 1024kB DRAM (010000H through 07FFFFH).

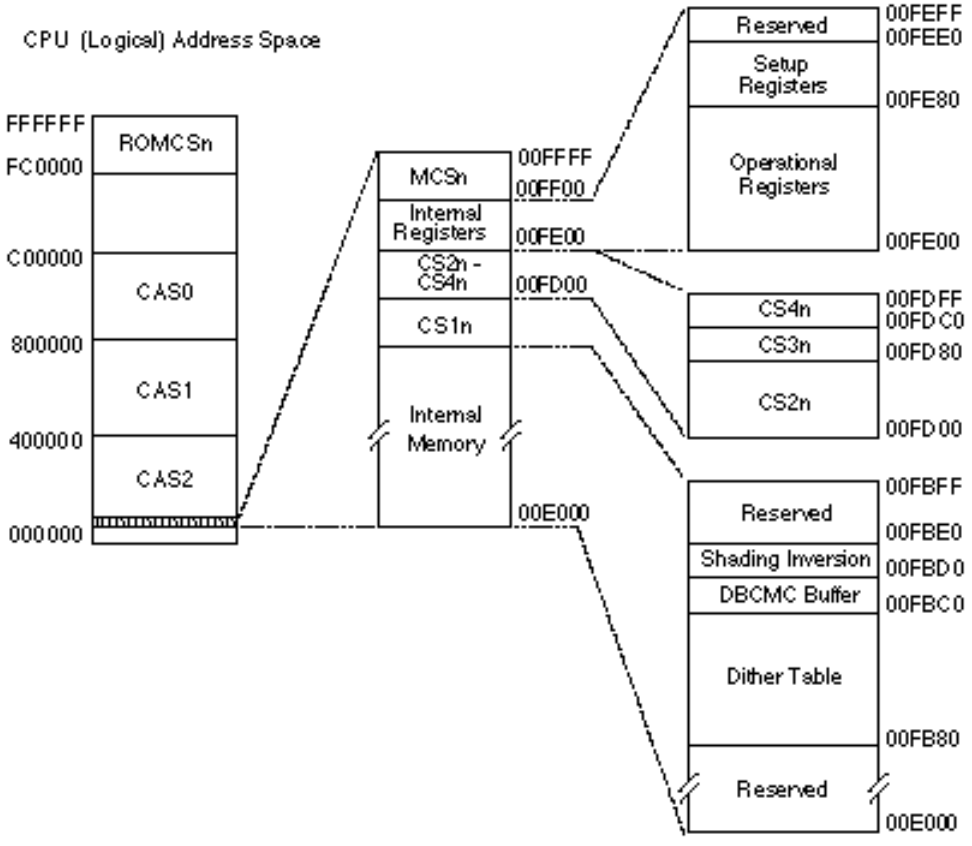


Figure 5-1 KS32C6500 External Memory Map

5-2-2. Jupiter-2 Chip

KS32C6500 internal logic generates chip select signals for both memory chips and peripherals. To support external access, from one to three wait cycles can be inserted under program control during external accesses. A chip select signal line goes active (low) whenever its corresponding device is accessed over the external interface. The peripheral addresses are located in data memory.

/SRAMCS : SRAM chip select active (low)
/ ROMCS : EP-ROM chip select active (low)
D0–D15 : 16 bit data bus
A0–A17 : address bus

5-2-3. System Clock

The 30 MHz internal system clock frequency is supplied by an external clock generator.

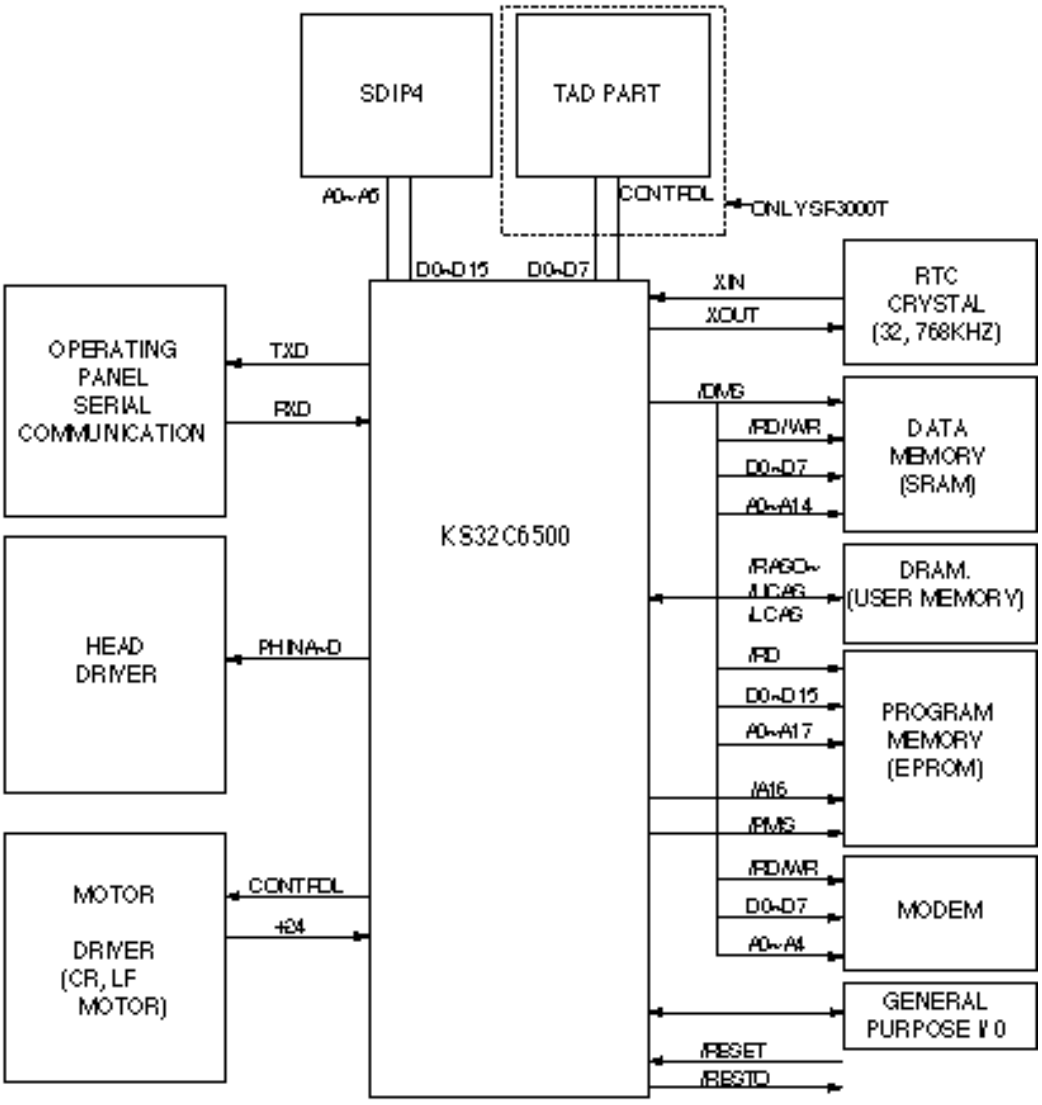


Figure 5-2 Hardware Interface Signals

5-2-4. Real Time Clock (RTC)

The circuit receives clock pulses from an external 32.768 kHz crystal, which it divides into hours, minutes, seconds, year, month, and day. A battery maintains operation when power is off. KS32C6500 can up-track 100 years, begining with 1998.

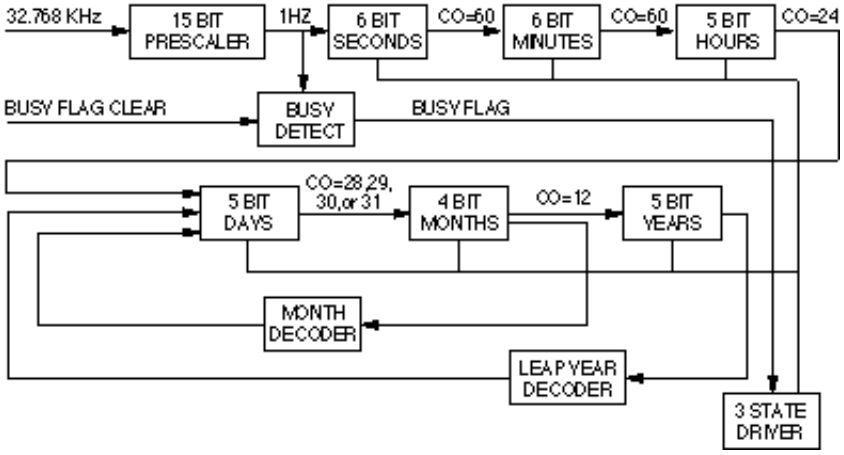


Figure 5-3 RTC Block Diagram

5-2-5. Operation Panel Control

A Synchronous / Asynchronous Receiver / Transmitter (SART) controls serial data transmission between the main circuit and the operator panel.

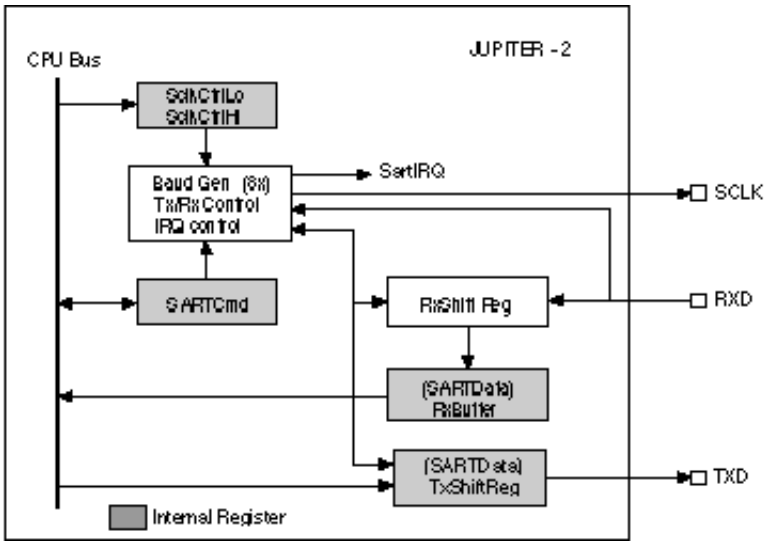


Figure 5-4 SART Block Diagram

5-2-6. Serial Communication Signals

The KS32C6500 has two full-duplex serial communication ports. One port is used for I-LIU communication, and the other for OPE communication.

5-2-7. Reset

To initialize the chip's internal logic, the reset input (/RESET) must be held to 0 Volt for at least 22 CPU clocks. During this time, Vdd must be greater than 3 volt. The watchdog timer can also invoke a system reset.

[+5V Power Monitoring]
If 5 Volt power to KIA7045P drops to between 4.65V and 4.35V (typically 4.5V), power failure will be indicated and the output of KIA7045P will go 'low' (GND5). This causes the KS16118 to become active ('low'=reset).

The KS32C6500 reset causes the /RESET terminal to be reset. The output terminal of KIA7045P is an open-drain configuration, and is connected to KS32C6500 through a 10 kohm pull-up resistor.

5-2-8. Carriage Return Motor Driver

The CR motor drives the head in two directions to print data on the recording paper.
- Motor type : Step Bipolar
- Operation Voltage : +24V DC
- Resistance : 5 ohm +/-10%
- IC : PBL3717 x2EA

STEP MOTOR DRIVER OUTPUT SIGNAL

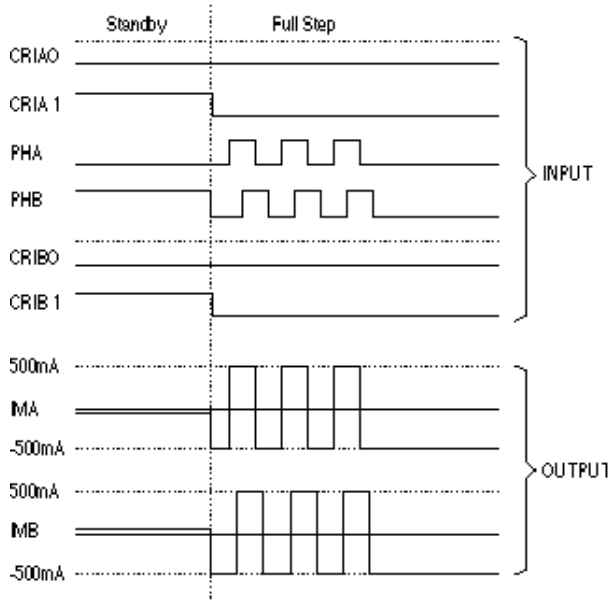


Figure 5-5 Step Motor Drive

5-2-9. Line Feed Motor Driver

The LF motor feeds paper in and out.
- Motor type : Step Unipolar
- Operation Voltage : +24V DC
- Holding Voltage : +5V DC
- Resistance : 50 ohm ±10%
- IC : STA471A

5-2-10. Head Nozzle Driver

The nozzle control circuit is composed as follows:
- Number of nozzle : 56 nozzles for mono
- Driving Voltage : +24V DC +/-2%
- Driving Pulse Width : 3.6 us for mono
- Operation Frequency : 5 kHz
- Resistance : 30 ohm for mono
- IC : SGS Thomson L6451 or Allegro A5817

The IC decodes four input signals (PHINA, PHINB, PHINC, PHIND) and enables the selected using OEA and OEB signal input.

IND	INC	INB	INA	N
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	10
1	0	1	1	11
1	1	0	0	12
1	1	0	1	13
1	1	1	0	ALL OFF
1	1	1	1	ALL OFF

Table 5-1 Nozzle Driver Signal

5-2-11. Jupiter-2 (KS32C6500) Pin Layout Diagram

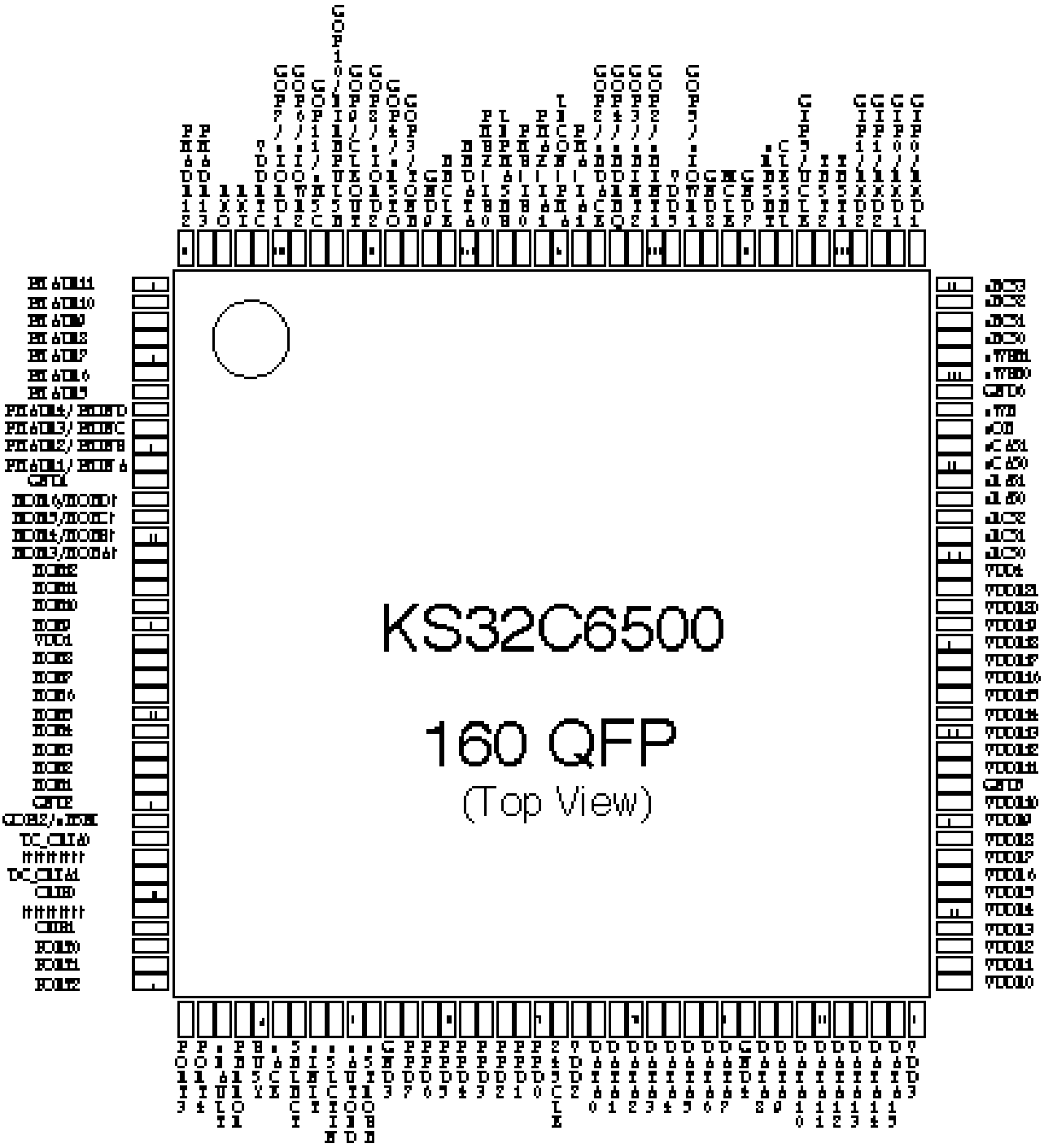


Figure 5-6 Pin Layout Diagram

5-2-12. Jupiter-2 ASIC(KS32C6500) Pin Description

Pin No.	KS32C6500	ATLAS used pin	Pin Description
1	_PHGA11	NOT-USED	
2	_PHGA10	NOT-USED	
3	_PHGA9	NOT-USED	
4	_PHGA8	NOT-USED	
5	_PHGA7	NOT-USED	
6	_PHGA6	NOT-USED	
7	_PHGA5	NOT-USED	
8	_PHGA4	PHIND	INK NOZZLE ENABLE CONTROL SIGINAL
9	_PHGA3	PHINC	INK NOZZLE ENABLE CONTROL SIGINAL
10	_PHGA2	PHINB	INK NOZZLE ENABLE CONTROL SIGINAL
11	_PHGA1	PHINA	INK NOZZLE ENABLE CONTROL SIGINAL
12	GND1	GND1	
13	PHOE16	_HOED	INK NOZZLE DECODING SIGNAL
14	PHOE15	_HOEC	INK NOZZLE DECODING SIGNAL
15	PHOE14	_HOEB	INK NOZZLE DECODING SIGNAL
16	PHOE13	_HOEA	INK NOZZLE DECODING SIGNAL
17	PHOE12	NOT-USED	
18	PHOE11	NOT-USED	
19	PHOE10	NOT-USED	
20	PHOE9	NOT-USED	
21	VDD1	VDD1	
22	PHOE8	NOT-USED	
23	PHOE7	NOT-USED	
24	PHOE6	NOT-USED	
25	PHOE5	NOT-USED	
26	PHOE4	NOT-USED	
27	PHOE3	NOT-USED	
28	PHOE2	NOT-USED	
29	PHOE1	NOT-USED	
30	GND2	GND2	
31	GOP12	GOP12	TX CONTROL CRPHA, CRPAB: PHASE A, B DIRECTION CONTROL SIGNAL CRIA, CRIB: PHASE A, B CURRENT CONTROL SIGNAL L L : HIGH H L : MEDIUM L H : LOW H H : NO
32	DC_CRIA0	CRIA0	
33	CRPHA / CHX	CRPHA	
34	DC_CRI41	CRIA1	
35	CRIB0	CRIB0	
36	CRPHB / CHY	CRPHB	
37	CRIB1	CRIB1	
38	GPIO0	GPIO0	
39	GPIO1	GPIO1	
40	GPIO2	GPIO2	
41	GPIO3	GPIO3	
42	GPIO4	GPIO4	
43	_FAULT	NOT-USED	

Pin No.	KS32C6500	ATLAS used pin	Pin Description
44	PERROR	NOT-USED	
45	BUSY	NOT-USED	
46	_ACK	NOT-USED	
47	SELECT	NOT-USED	
48	_INT	NOT-USED	
49	_SLCTIN	NOT-USED	
50	_AUTOFD	NOT-USED	
51	_STROBE	NOT-USED	
52	GND3	GND3	
53	PPD7	NOT-USED	
54	PPD6	NOT-USED	
55	PPD5	NOT-USED	
56	PPD4	NOT-USED	
57	PPD3	NOT-USED	
58	PPD2	NOT-USED	
59	PPD1	NOT-USED	
60	PPD0	NOT-USED	
61	245DIR	NOT-USED	
62	VDD2	VDD2	
63	D0	D0	
64	D1	D1	
65	D2	D2	
66	D3	D3	
67	D4	D4	
69	D5	D5	
69	D6	D6	
70	D7	D7	
71	GND4	GND4	
72	D8	D8	
73	D9	D9	
74	D10	D10	
75	D11	D11	
76	D12	D12	
77	D13	D13	
78	D14	D14	
79	D15	D15	
80	VDD3	VDD3	
81	A0	A0	
82	A1	A1	
83	A2	A2	
84	A3	A3	
85	A4	A4	
86	A5	A5	
87	A6	A6	
89	A7	A7	
89	A8	A8	

Pin No.	KS32C6500	ATLAS used pin	Pin Description
90	A9	A9	
91	A10	A10	
92	GND5	GND5	
93	A11	A11	
94	A12	A12	
95	A13	A13	
96	A14	A14	
97	A15	A15	
98	A16	A16	
99	A17	A17	
100	A18	A18	
101	A19	A19	
102	A20	A20	
103	A21	A21	
104	VDD4	VDD4	
105	_RCS0	_RCS0	PROGRAM ROM CHIP SELECT
106	_RCS1	NOT-USED	FONT ROM CHIP SELECT
107	_RCS2	_RCS2	SRAM CHIP SELECT
108	_RAS0	_RAS0	DRAM ROW ADDRESS STROBE (DEFAULT)
109	_RAS1	NOT-USED	DRAM ROW ADDRESS STROBE (OPTION)
110	_CAS0	_CAS0	DRAM LOWER COLUMN ADDRESS STROBE
111	_CAS1	_CAS1	DRAM UPPER COLUMN ADDRESS STROBE
112	_OE	_OE	MEMORY OUTPUT ENABLE
113	_WE	_WE	MEMORY WRITE ENABLE
114	GND6	GND6	
115	_WBE0	_WBE0	WRITE BYTE ENABLE
116	_WBE1	NOT-USED	WRITE BYTE ENABLE
117	_ECS0	_ECS0	MODEM CHIP SELECT
118	_ECS1	_ECS1	DSP CHIP SELECT
119	_ECS2	_ECS2	SDIP4 CHIP SELECT
120	_ECS3	NOT-USED	
121	GOP0	GOP0	LIU TXD
122	GIP0	GIP0	LIU RXD
123	GOP1	GOP1	OPE TXD
124	GIP1	GIP1	OPE RXD
125	TEST1	TEST1	NORMAL MODE: GND
126	TEST2	TEST2	DEBUG MODE: VCC
127	CHIP5	CHIP5	HEAD CHECK
128	CLKSEL	CLKSEL	MASTER CLK SELECT: H
129	_RESET	_RESET	SYSTEM RESET
130	GND7	GND7	
131	MCLK	MCLK	MASTER CLK (30MHZ)
132	GND8	GND8	
133	GOP5	GOP5	RX CONTROL
134	VDD5	VDD5	
135	GIP2	GIP2	_MODEM INTERRUPT REQUEST

Pin No.	KS32C6500	ATLAS used pin	Pin Description
136	GIP3	GIP3	TX INT
137	GIP4	GIP4	_XDREQ (SDIP4)
138	GOP2	GOP2	_XDACK (SDIP4)
139	LFIA0	LFIA0	LF MOTOR PHASE CONTROL
140	LFPHA	LFEN	LF MOTOR ENABLE
141	LFIA1	LFIA1	LF MOTOR PHASE CONTROL
142	LFIB0	LFIB0	LF MOTOR PHASE CONTROL
143	LFPHB	NOT-USED	
144	LFIB1	LFIB1	LF MOTOR PHASE CONTROL
145	EEDATA	NOT-USED	
146	EECLK	NOT-USED	
147	GND9	GND9	
148	GOP3	GOP3	KEY CLICK
149	GOP4	GOP4	POR CONTROL
150	GOP8	NOT-USED	
151	GOP9	GOP9	SDIP4 CLK (30MHZ)
152	GOP10	GOP10	_RESET OUT
153	GOP11	NOT-USED	
154	GOP6	NOT-USED	
155	GOP7	NOT-USED	
156	VDDRTC	VDDRTC	RTC BACK-UP
157	RXI	RXI	RTC CLK IN
158	RXO	RXO	RTC CLK OUT
159	_PHGA13	NOT-USED	
160	_PHGA12	NOT-USED	

5-3. Memory

System memory consists of 512 kB ROM, 32 kB SRAM and 1024 kB DRAM. All of SRAM is backed up. ROM and SRAM are selected by chip select lines, and data is accessed by the units position of the byte.
5V power is applied to SRAM through VSB. This facsimile machine uses a Lithium battery for memory backup. A, 820 ohm resistor in series with the positive battery terminal is for battery protection.

5-4. Modem and TX- and RX- Related Circuits

These circuits control transmission between the internal MODEM and the LIU or a remote MODEM.
The KS16117 is a single-chip fax-MODEM having features to detect and generate DTMF tones. TX OUT is the MODEM output port, and RX IN is the input port. /PORI is the Jupiter-2 signal which enables MODEM initialization at system power on. D0 - D7 are data buses. RS0 - RS4 are internal register select signals which determine the mode. /CS is the chip select signal, and /RD /WR are the read and write control signals. RLSD is used for v.24 interface-related signals and /IRQ is the MODEM interrupt.

5-4-1. Transmit Circuit

This circuitry controls transmission of analog signals from the MODEM. Output voltage from the MODEM is buffered through the LIU board and OP amp after signal smoothing and filtering, and finally output to the line.

5-4-2. Receive Circuit

In receive mode, analog signals from the LIU board are transferred to RX IN through the BPF and smoothing filter.

5-5. Image Processor / Motor Driver (SDIP4)

- Scan driver generates the control signals to acquire the document data from the scanner and to operate the Image Processor.
- Motor driver generates the control signals to drive the Tx-Motor according to programmed motor speed.

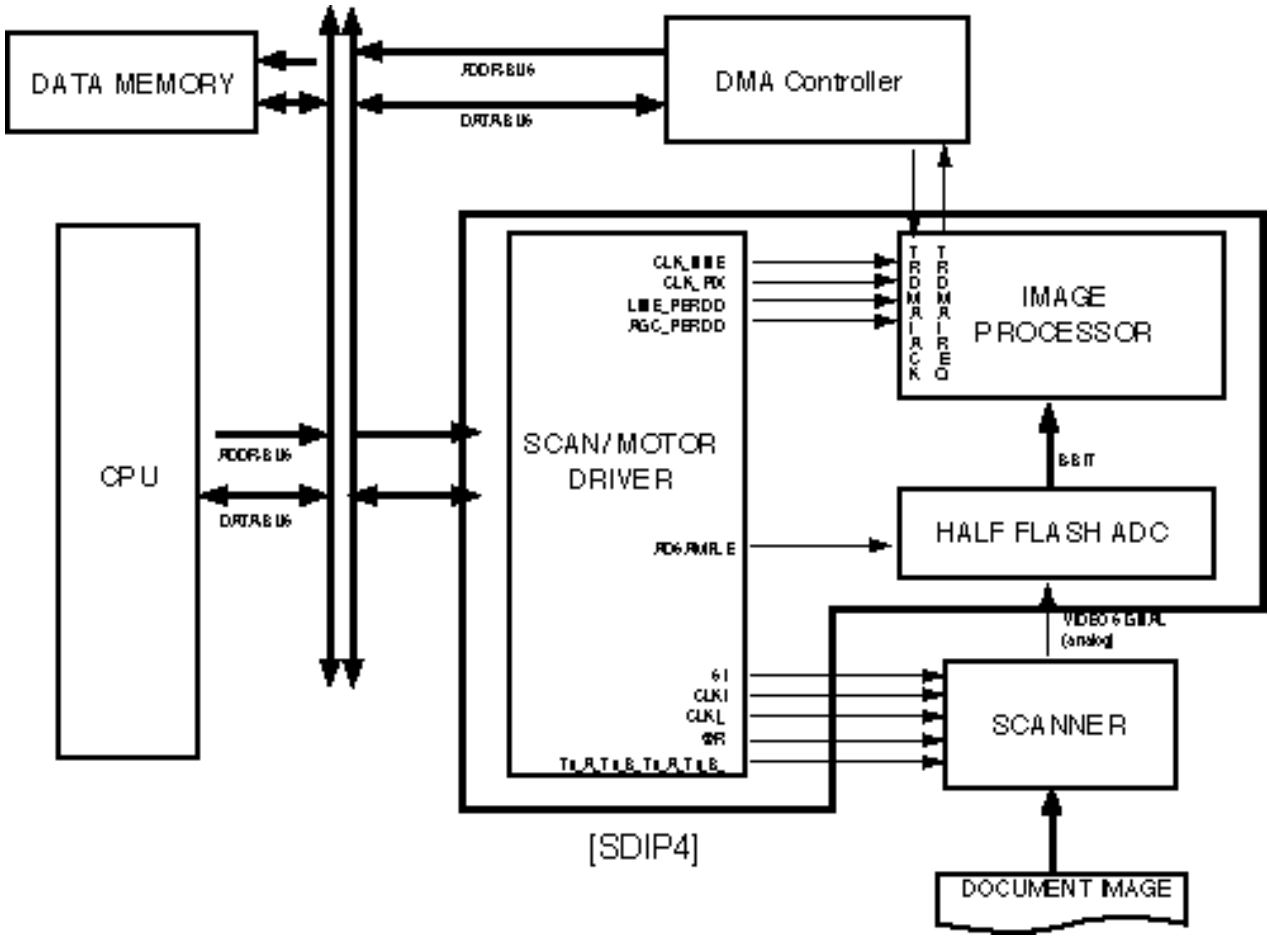


Figure 5-7 Block Diagram of Scanner Control Function

HARDWARE BLOCK DIAGRAM

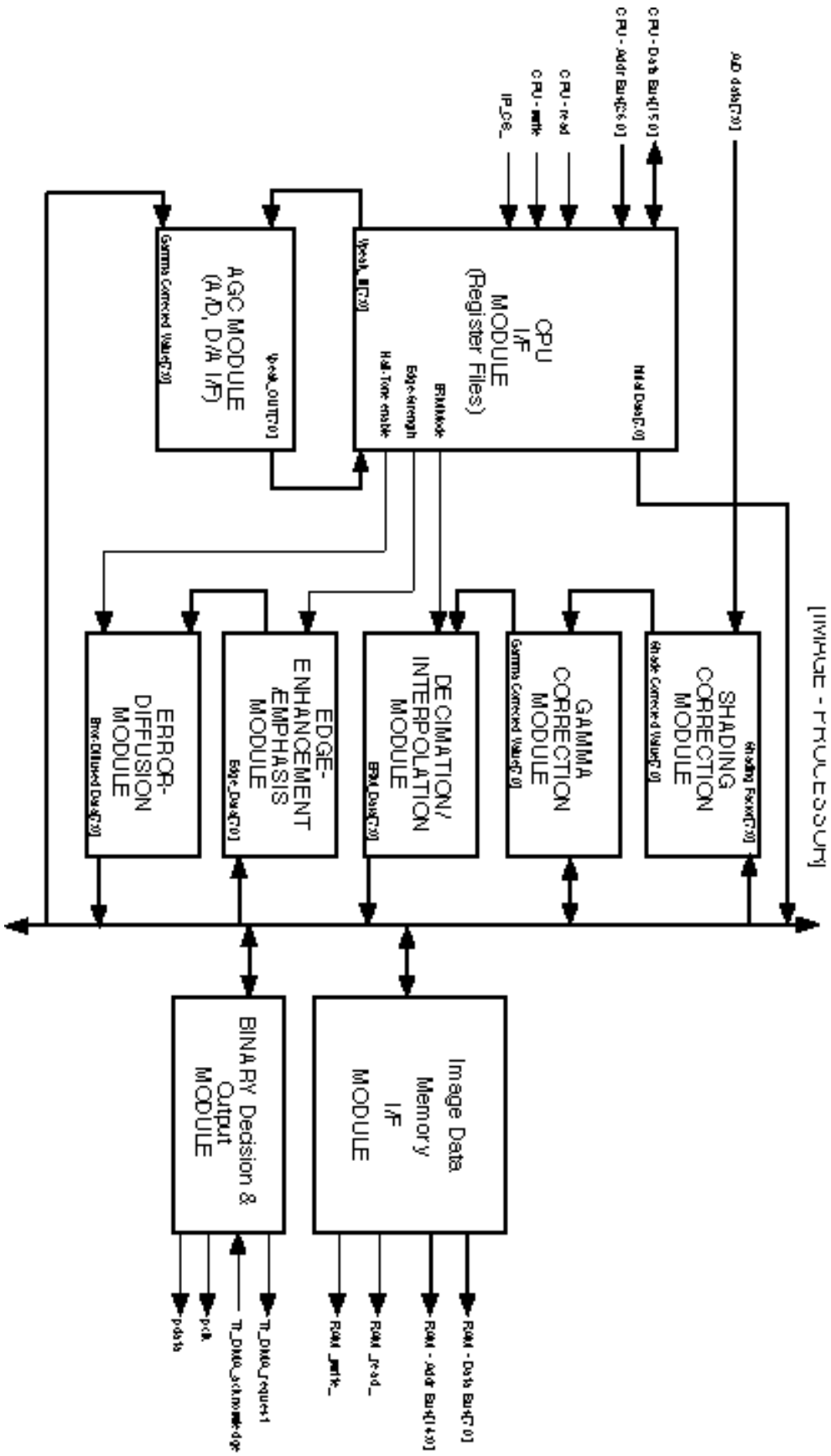


Figure 5-8 Hardware Block Diagram of Image Processor

5-5-2. Image Sensor

This shading wave is formed by scanning the white roller prior to a document. The slice level is determined by the shading wave, and compensates for shading distortion according to the CIS characteristics. The wave format from the CIS is converted into a 6 bit digital value in the SDIP4 image processor, and then processed in B/W or intermediate mode.

5-5-3. CIS Driver

The CIS driver clock (CLK) frequency is 500 kHz. A low duty cycle of 75% is used to lengthen the charging time. A start signal (SI) is provided every 5 ms to match the line scanning time. Actual image signal (VIN) is provided in less than 3.4 ms, using the 500 kHz clock, taking A4 paper size into consideration.

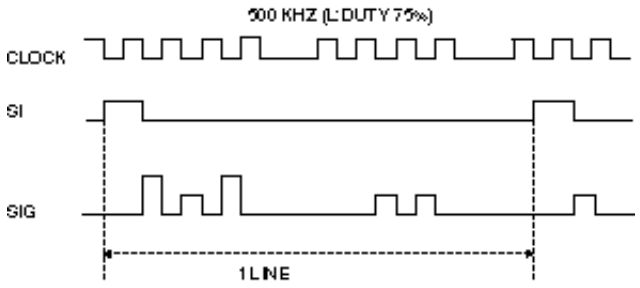


Figure 5-9 CIS Diver Clock Timing

5-5-4. Sensor Detection Circuit

PE SENSOR 1,2

This sensor detects whether paper is loaded in the automatic sheet feeder. If no paper is detected, the output signal turns high. While paper is feeding to print, the output turns low.

HOME DETECTION CIRCUIT

This circuit detects whether the head is in home position. When power turns on and head is capped, the circuit is activated. If the head is in the home position, the output turns high.

5-5-5. Scan Motor Controller

The SF3000/SF3000T model facsimile machines perform their send function utilising a single 24 volt motor. This motor has a winding resistance of 120 ohms. Three drive strobe pulses are used to operate the motor.

Motor Function	Drive Strobe Pulse	Phase
Document Feed In/Out	400 pps	1-2 phase
Fine Copy/Tx	400 pps	1-2 phase
Super Fine Tx	400 pps	1-2 phase

5-5-6. SDIP4 Pin Layout Diagram

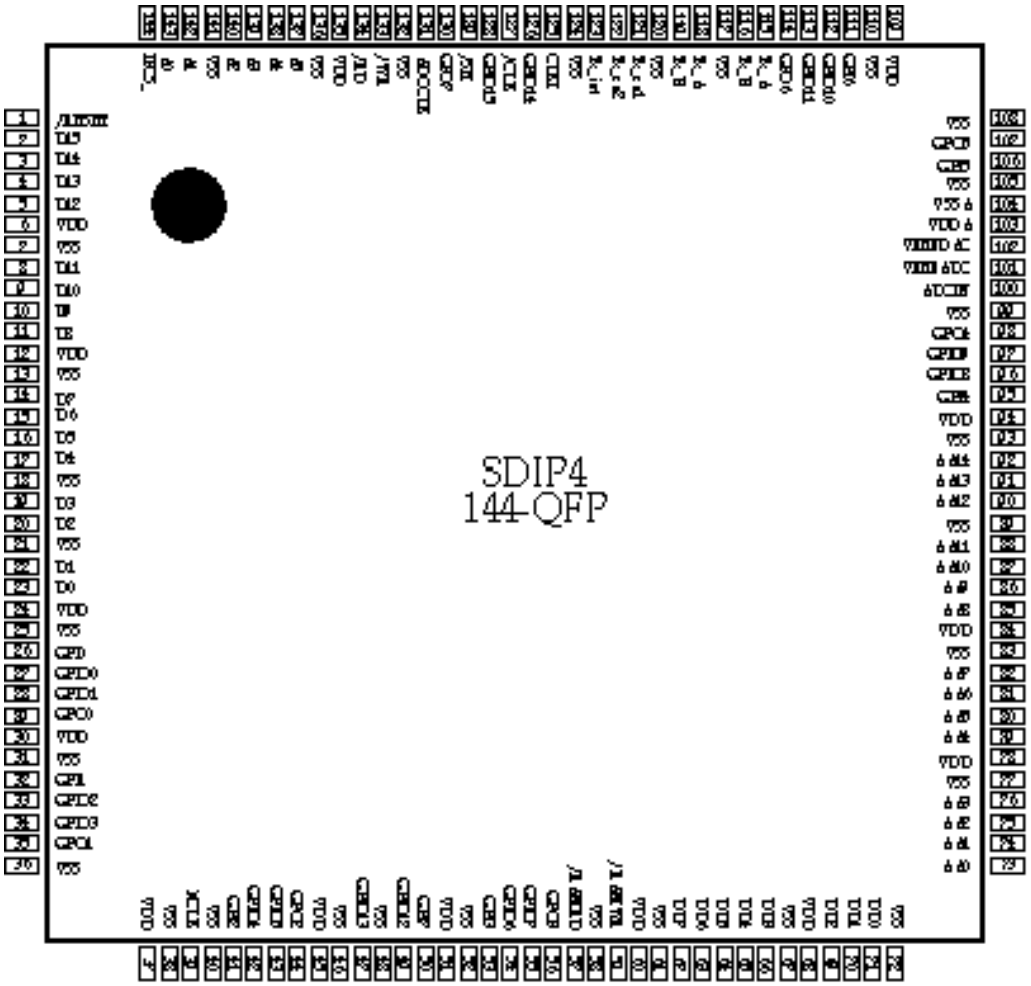


Figure 5-10 Pin Lay out Diagram

5-5-7. SDIP4 ASIC Pin Description

Name	Type	Description	
$\overline{\text{RESET}}$	I	Power on reset pin.	active : L
A[5:0]	I	CPU interface address bus.	
D[15:0}	B	CPU interface data bus.	
$\overline{\text{WR}}$	I	CPU interface write signal pin.	
$\overline{\text{RD}}$	I	CPU interface read signal pin.	
IPCS	I	CPU interface chip select signal pin.	
XP	I	System clock input pin.	
AIN	I	Sensor image signal input pin.	
Ør	O	CCD charge clear signal pin.	
SI	O	CCD/CIS line clear signal pin.	
CLK1	O	Sensor Drive signal output pin.	
CLK2	O		
DREQ	O	DMA data request signal output pin.	active : H
DACK	I	DMA data acknowiedge output pin.	active : L
$\overline{\text{RAM_RD}}$	O	IP-SRAM read signal pin.	
$\overline{\text{RAM_WR}}$	O	IP-SRAM write signal pin.	
RAM_addr[14:0]	O	IP-SRAM address bus.	
RAM_data[7:0]	O	IP-SRAM data bus.	
Tx_A	O	Motor drive signal pins.	
Tx_B	O		
$\overline{\text{Tx_A}}$	O		
$\overline{\text{Tx_B}}$	O		
Tx_en1	O		
Tx_en2	O		
Tx_int	O	Motor drive interrupt pin.	
GPI[7:0]	I	General purpose input pins.	
GPO[7:0]	O	General purpose output pins.	
GPIO[7:0]	B	General purpose input/output pins.	

5-6. TAD (SF3000T Only)

TAD circuit consists of a voice coprocessor to record and play voice messages in voice memory.

5-6-1. Recording path

R62 provides power to the condenser microphone. Voice signal from the microphone is passed through active filter U22, R60 and C51, R58, C48 to clear aliasing noise occuring while sampling and amplifying the signal. Q5 and Q4 compose ALC (Automatic Level Control) circuit. CODEC (U29) converts the voice signal to digital and converts the digital signal from voice coprocessor into analog for line output.

5-6-2. Mic input path

Transmit path functions as MIC input path. Outgoing messages and memo messages from CODEC are stored in the voice memory (4Mb DRAM) through the DSPG DRAM controller.

5-6-3. Line input and play path

Incoming signals from line are stored in the voice memory (4Mb DRAM) through CODEC and DSPG DRAM controller. When played, DSPG processes the data stored in voice memory and sends it out to LIU through CODEC and R93. To playback through the speaker, DSPG sends the signal to speaker through R93, MUX (U25, U26), and op amp.

5-6-4. DSPG

This circuit consists of Host Interface, Memory Interface, CODEC Interface, and DSP core. Host Interface sends and receives data to and from IFC. Memory Interface sends and receives the compressed voice data to and from DRAM to play back and record voice data. DSP core communicates with host IFC through Host Interface.

5-6-5. Voice backup

+5V is supplied for voice memory through VBT when power is on. When power is off, +5V is supplied from the 9V backup battery.

5-7. LIU PBA

The LIU (Line Interface Unit) interfaces the MODEM and telephone to the telephone line. The FAX and telephone portions of the LIU are active with machine power on. When machine power is off, only the telephone circuity operates, powered by telephone line voltage. The FAX portion of LIU consists of the interface between MODEM and telephone line, and the circuits for DC loop feeding, DP signal, loop current and ring detect. The telephone portion is divided into ringer, dialling and speech circuits. Refer to the schematic and connection diagram sections of this manual.

5-7-1. FAX section

MODEM/LINE INTERFACE

Following is the path for data and remote control signals:

- CML1 relay: Switches telephone line between FAX and telephone circuits.
- U1 pin 3TIT: Single ended input for transformer (T2)

  TIT: Transformer Input from Transformer
- U1 pin 40 ROT: Output for driving transformer (T3) with an AC impedance greater than 10 Kohm.

  ROT: Receive Output Transformer
- C57: DTMF and CNG detect path to T1 20Kohm winding under idle conditions, and DC blocking for 20Kohm winding.
- AC impedance: The AC impedance of U1 (I-LIU) is set to 1000 ohm by external capacitor (C32) at U1 pin 8 CI (Complex Impedance Input) port. With the external resistor (R38) at U1 pin 34 ACI port, it can be programmed to 600ohm. U1 pin 35 CS (Current Shunt control output) port is an N-channel open drain output to control the external high power shunt transistor for synthesizing AC and DC impedance.
- DC conditions: The normal operating mode is from 15mAto 100mA. An operating mode with reduced performance is from 5mAto 15mA. In the line hold range from 0mA to 5mA, the device is in a power down mode and the voltage at U1 pin 37 LI (Line Input) port is reduced to a maximum of 3.5V. The DC characteristic is determined by the voltage at U1 pin 37 LI port and R45 resistor between U1 pin 37 LI and pin 39 LS port. It can be calculated by the following equation: $V_{LS} = V_{LI} + I_{LINE} \times 45$.

RING DETECT

- U1 pin 28 (MO) is ring melody output port and this signal drives FET3 which drive Photo coupler U4 for artificial ring.

MF DIAL (Same as telephone section)

- U1 pin 2 DMS (Dial Mode Selection) port is set to VDD by R46. It has M/B ratio of 33:66, and in no power operation mode operates only DP.
- MF signal appears (tone level of low group: typical - 14 dBm) at U1 pin 4 MFO (DTMF Generator Output). This signal is leveled by R32, R28 and C29, then to amplier U1 pin 9 MFI (DTMF Amplier Input).
- Line dial signals appear at U1 pin 39 LS (Line Current Sense Input).

DP DIAL (Same as telephone section)

- U1 pin 2 (DMS) is set to Vdd (33/66) or VSS (40/60) by R46 or R52 resistor.
- Dial pulses originate at U1 pin 27 (DPN), which toggles Q5, which drives Q2. The resulting intermittent voltage interrupts the telephone line.
- Pulse M/B ratio is set by U1 pin 2 DMS port.
  Vdd = 33/66, and Vss = 40/60.
- U1 pin 35 CS port: Modulation of line voltage and shorting the line during make period of pulse dialling.

LLC (Line Loss Compensation) LOOP CURRENT DETECT

- The LLC is a pin option. When it is activated, the transmit and receive gains for both I/O are decreased by 6dB at line currents from 20mA when the U1 pin 31 LLC is connected to AGND, from 75mA when this pin is connected to VDD. The LLC is deactivated when LLC pin is connected VSS.
- When the CML1 relay or Hook Switch switches to telephone line, the U1 in the LIU board and CPU (U1) in the Main board srart communication. The U1 send <Ack> message contains the line current information. Using this line current information Main CPU can recognize a parallel phone.

SERIAL INTERFACE

- U1 pin 11 RXD: Schmitt trigger input (treshold = 2.5V) to serial interface.
- U1 pin 29 TXD: Open drain output from serial interface.
- The communication principle is derived from a standard UART:
  Baud Rate 9600
  Start Bit 1
  Stop Bit 1
  Data Bits 8
  Parity Bit None
  LSB is transferred prior to MSB.

5-7-2. Telephone Section

RINGER CIRCUIT

- When a ringing signal is applied to the line, Vdd of U1 (I-LIU) is charged up via an external path. After Vdd has reached the operating voltage the oscillator starts and U1 discriminates the ring frequency.
  After a valid ring frequency is applied to the U1 pin 25 RFD (Ring Frequency Discrimination) port, the ring melody generator of U1 sends out a 3-tone melody via the U1 pin 28 MO (Ring Melody Output)port.
- U1: I-LIU and associated components.
- Ring frequency passes through DC blocking capacitor C3 or C4 (for Switzerland or Austria) and Zener-diode ZD2 or ZD3 (for Switzerland or Austria) to U1 pin 25 RED port.
- Line ring voltage passes through bridge diode BD1, CML relay and Hook Switch to FET3 (BS170) pin 3, C21, R19.
- The ring frequency discriminator of U1 assures that only signals with a frequency between 13Hz and 70Hz are regarded as valid ring signals.
- When a valid ring signal is present for 73ms continuously, the ring melody generator (pin 28, MO) is activated and remains active as long as a valid ring signal is present.
- U1 filters the ring signals and output is pin 28 (MO).
- The 3 basic melody frequencies are : F1 = 880 Hz, F2 = 1067 Hz and F3 = 1333 Hz. The repetition rate is set to 4 which means that the sequence of F1, F2, F3, F1, F2, F3 is repeated 4 times within a second.

SPEECH CIRCUIT

- U1 (STI9510) and associated components.
- Handset transmitting circuit. Condensor MIC of handset is filtered by R25, C28, C27, C20, C19, C24, C22 and C30, and then amplified by U1 pin 32 and 33 (M1, M2)
- Handset receiving circuit. Receiving (Dynamic unit) of handset is filtered by R49, C45, C40, C44 and C23, and then applied by U1 pin 1 (ROH) and VSS.
- U1 pin 39 (LS) is audio output to telephone line.

SIDETONE CIRCUIT

- Sidetone audio characteristics are controlled by R37, R51, R5, R26, and C41 connected to U1 pin 7 STB.

5-8. OPE PBA

OPE PBAconsists of U300 (MICOM Z8601), LCD, key matrix, LED indicators, and the document detect and scan position sensors. Refer to OPE Schematic Diagram and Wiring Diagram sections of this manual.

- Signals from the key matrix and delivered to U300 X/Y input pin group (P1-X).
- U300 pin 4 (RX DATA) is UART code to MAIN PBA.
- Display from controller is received at U300 pin 5 (TX DATA).
- LCD drive signals are U300 P2-X pin group, connector pin P303-1 ~ P303-3.
- Machine status LED drive signals are U300 P01 pin group. (SF3000T only)
- Connector P302 is NPO (No Power Operation) key matrix output.

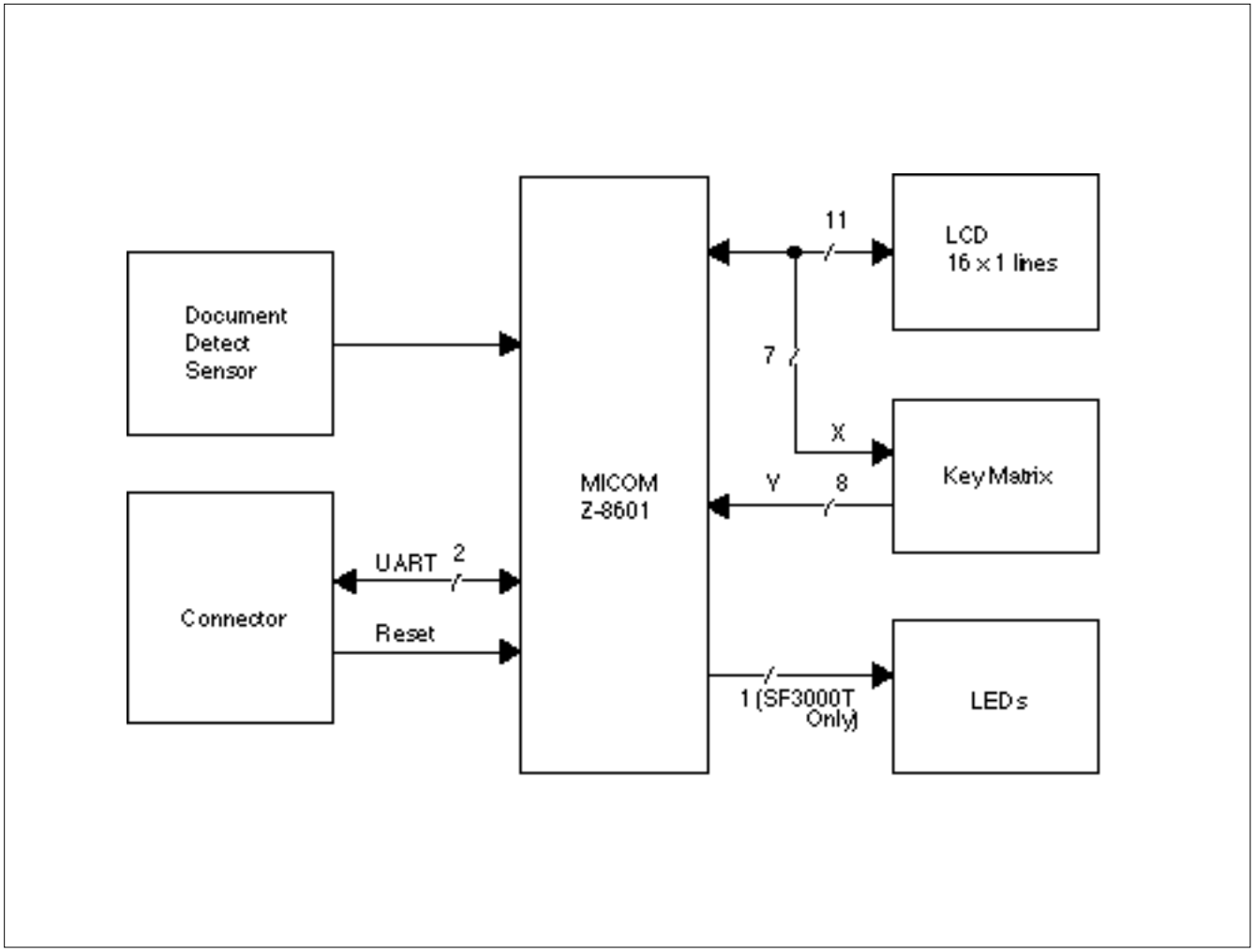


Figure 5-11 OPE Block Diagram

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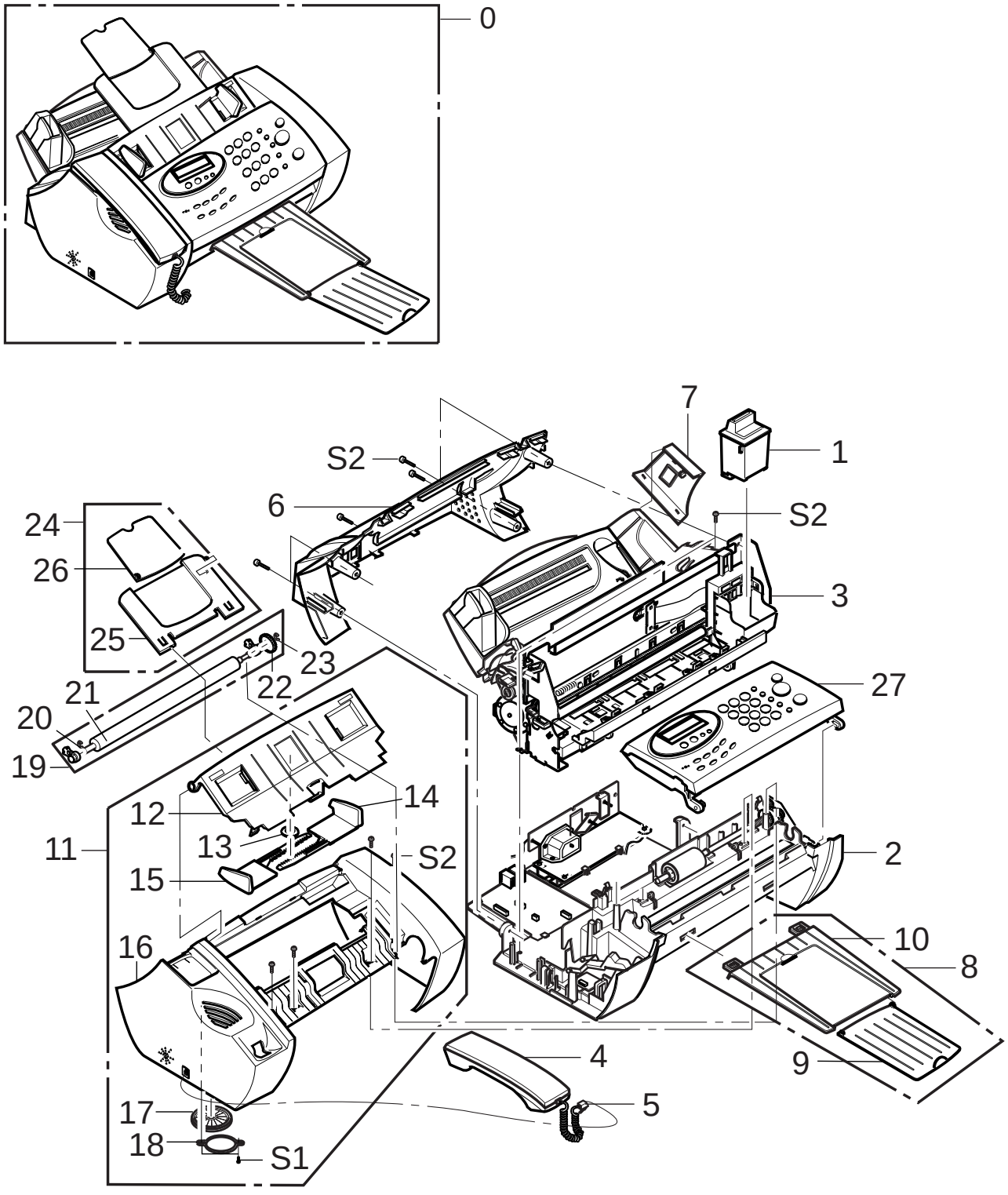
1. Exploded Views and Parts Lists

1-1. Main Assembly

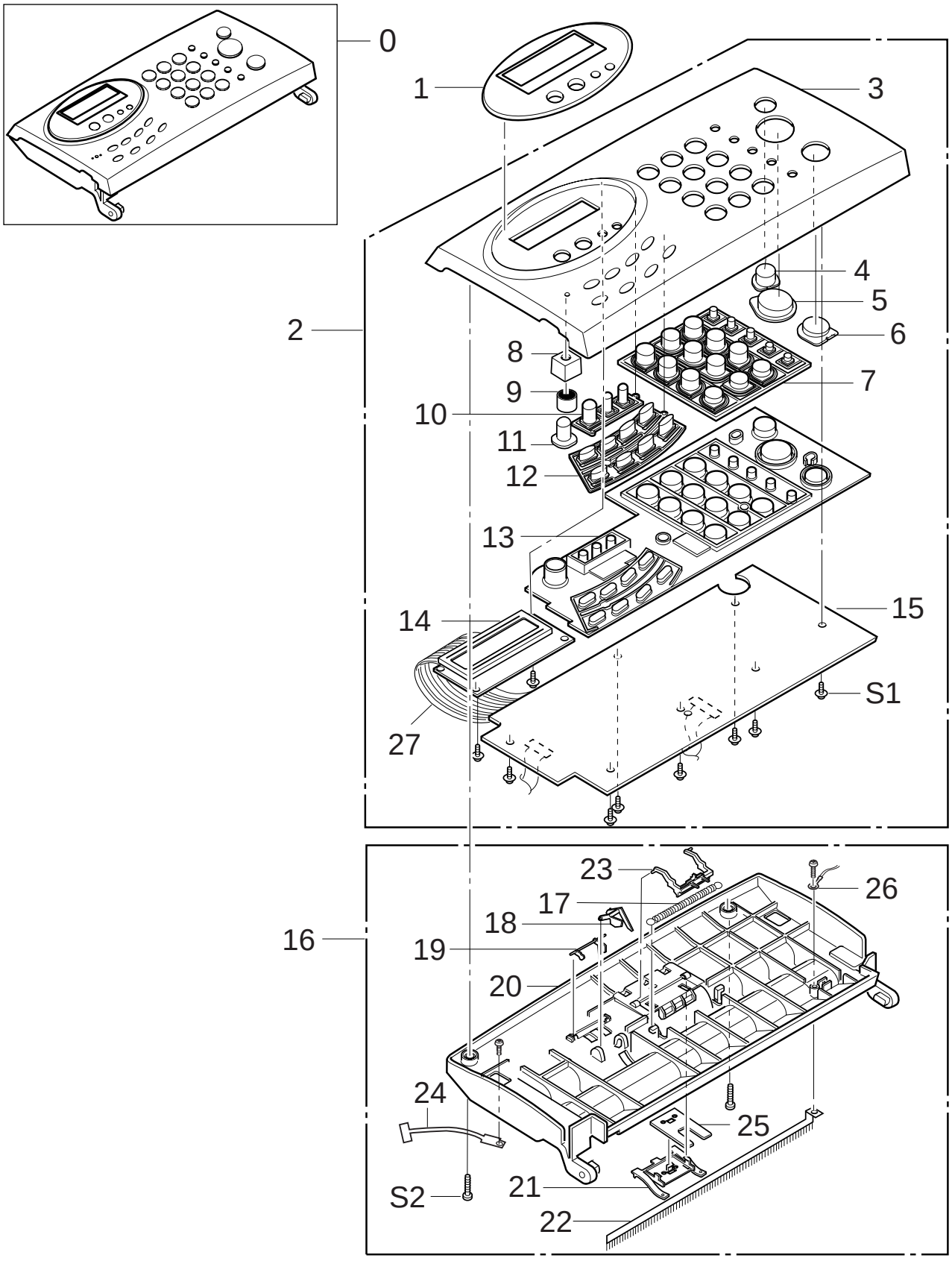


Main Assembly Parts Lists

Location No.	Description	SEC. Code	Q'ty	Remark
0		SF-3000I/XFA		SF3000
		SF-3000TI/XFA		SF3000T
1	PRINT HEAD INK-MONO	JB47-30506A	1	
2	ELA UNIT-BASE	*	1	
3	ELA UNIT-ENGINE	*	1	
4	ELA HOU-HANDSET	JB96-00946A	1	
5	CBF CURL CORD	JF39-60001A	1	
6	PMO-COVER REAR	JB72-41240A	1	
7	PMO-DUMMY ASF	JB72-41267A	1	
8	MEC-STACKER TX	JG75-10009A	1	
9	PMO-STACKER TX(1)	*	1	
10	PMO-STACKER TX(2)	*	1	
11	ELA UNIT-COVER TOP	JB96-00948A	1	SF3000
		JB96-00956A	1	SF3000T
12	PMO-COVER DOC	*	1	
13	GEAR-PINION	*	1	
14	PMO-GUIDE DOC R	*	1	
15	PMO-GUIDE DOC L	*	1	
16	PMO-COVER TOP	*	1	
17	SPEAKER	3001-001044	1	
18	IPR-UNIT FIXING BRAC	*	1	
19	MEA ETC-ROLLER WHITE	JB97-01096A	1	
20	PMO-BUSHING WHITE	*	2	
21	MEC-ROLLER WHITE	*	1	
22	PMO-GEAR DRIVE(B4)	*	1	
23	RING-C	*	2	
24	MEC-CHUTE	JB75-11087A	1	
25	PMO-CHUTE(1)	*	1	
26	PMO-CHUTE(2)	*	1	
27	ELA UNIT-OPE	JB96-00971B	1	SF3000
		JB97-00954F	1	SF3000T
S1	SCREW-TAPTITE, PWH, +, M2.5, L6	6003-000193	2	
S2	SCREW-TAPTITE, BH, +, M3, L8	6003-000259	12	

*: service not Available

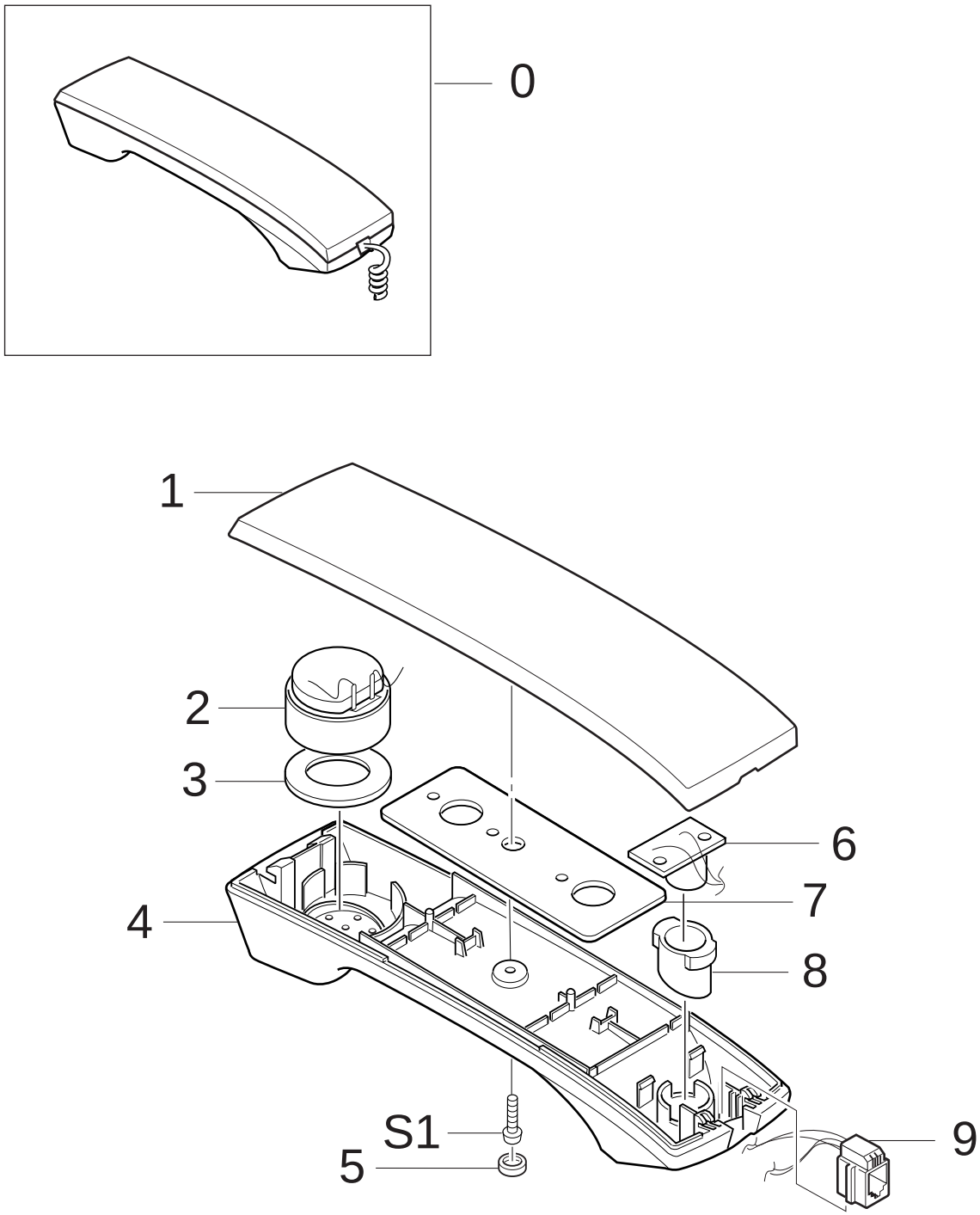
1-2. OPE Unit Assembly



OPE Unit Assembly Parts Lists

Location No.	Description	SEC. Code	Q'ty	Remark
0	ELA UNIT-OPE	JB96-00971B	1	SF3000
		JB96-00954F	1	SF3000T
1	MEA LCD WINDOW	JB75-11090A	1	SF3000
		JB75-11096A	1	SF3000T
2	ELA HOU-COVER OPE	JB96-00945E	1	SF3000
		JB96-00955F	1	SF3000T
3	PMO-COVER OPE	JB72-41261E	1	SF3000
		JB72-41354F	1	SF3000T
4	PMO-KEY STOP	JB72-41253A	1	
5	PMO-KEY START	JB72-41252A	1	
6	PMO-KEY OHD	JB72-41251A	1	
7	PMO-KEY TEL	JB72-41249A	1	
8	PMO-MIC ADAPTER	GB72-40770A	1	ONLY SF3000T
9	MIC-CONDENSOR	3003-000120	1	ONLY SF3000T
10	PMO-KEY TAD	JB72-41276A	1	ONLY SF3000T
11	PMO-KEY ANSWER	JB72-41275A	1	ONLY SF3000T
12	PMO-KEY FUNCTION	JB72-41250A	1	
13	RMO-CONTACT RUBBER	JB73-40906A	1	
14	DISPLAY LCD	JF07-20061A	1	
15	PBA SUB I/F-OPE	JG92-01036A	1	SF3000
		JG92-01036B	1	SF3000T
16	MEA UNIT-SCAN UPPER	JB97-01094A	1	
17	ICT-SPRING COIL	JG70-40514A	1	
18	PMO-LEVER SENSOR SCN	JB72-41257A	1	
19	PMO-LEVER SENSOR DOC	JB72-41247A	1	
20	PMO-FRAME SCAN UPPER	JB72-41248A	1	
21	PMO-HOLDER RUBBER	JG72-40044A	1	
22	MEC-ANTISTATIC BRUSH	JB75-11098A	1	
23	PMO-SUPPORT ADF	JG72-40043A	1	
24	PMO-TIE STOPPER	JG72-40717A	1	
25	RPR-RUBBER ADF	JG73-10003A	1	
26	CBF HARNESS-OPE(OPE-FRAME)	JB39-40532A	1	
27	CBF HARNESS(LCD FLAT CABLE)	JG39-41019A	1	
S1	SCREW-TAPTITE, PWH, +, B, M2.5, L6	6003-000193	9	
S2	SCREW-TAPTITE, BH, +, B, M3, L8	6003-000259	4	

1-3. Handset Unit Assembly

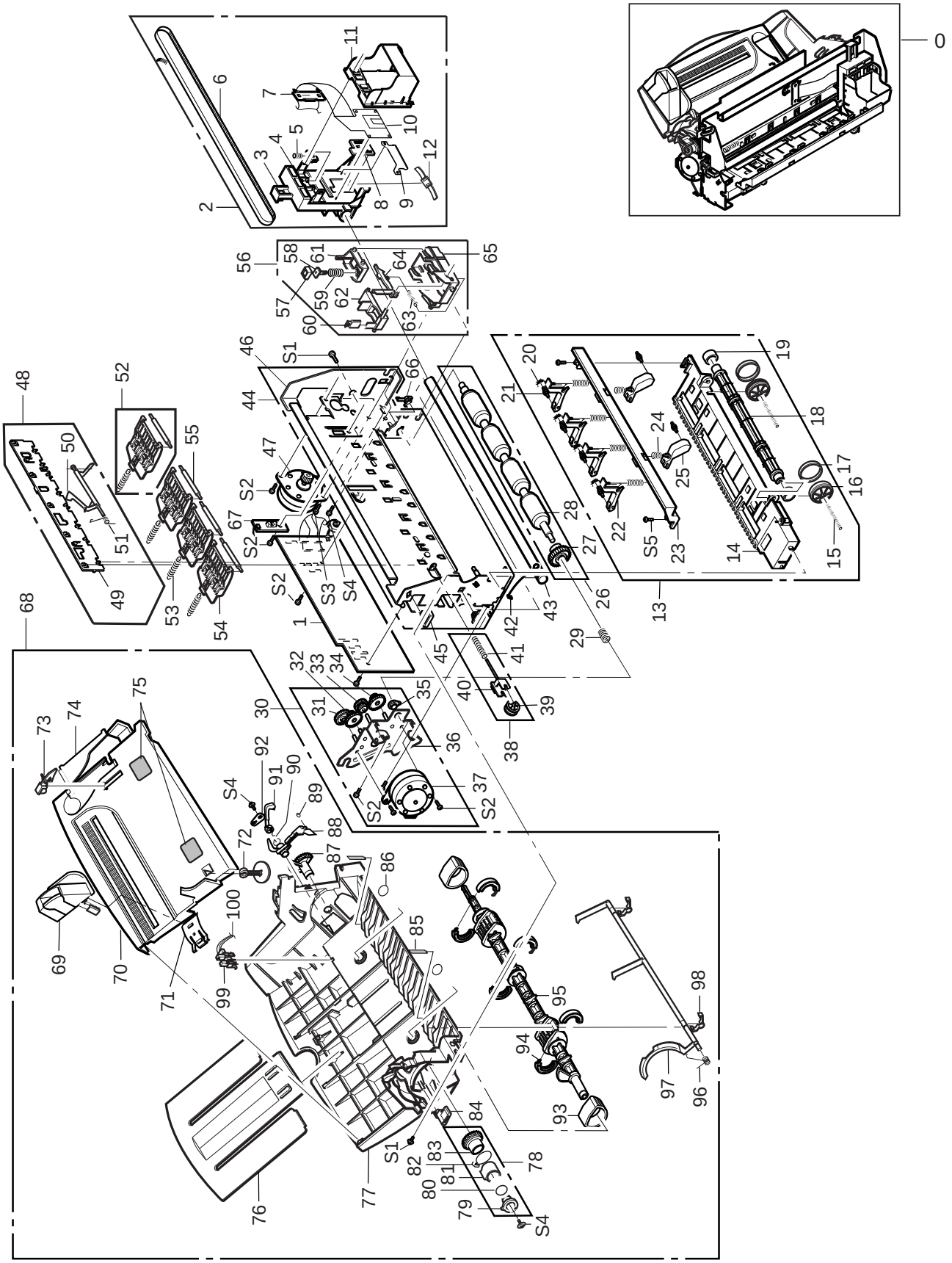


Handset Unit Assembly Parts Lists

Location No.	Description	SEC. Code	Q'ty	Remark
0	ELA HOU-HANDSET	JB96-00946A	1	
1	PMO-HANDSET UPPER	*	1	
2	AUDIO-RECEIVER	*	1	
3	RING-OP, ID17, OD35, T2	*	1	
4	PMO-HANDSET LOWER	*	1	
5	RMO-HOLE DUMMY	*	1	
6	PBA SUB ETC-MIC	*	1	
7	IPR-WEIGHT BALANCE	*	1	
8	RMO-RUBBER MIC	*	1	
9	CBF HARNESS-JACK	*	1	
S1	SCREW-TAPTITE, PH, +, B, M3, L8	*	1	

*: service not Available

1-4. Engine Unit Assembly



Engine Unit Assembly Parts Lists

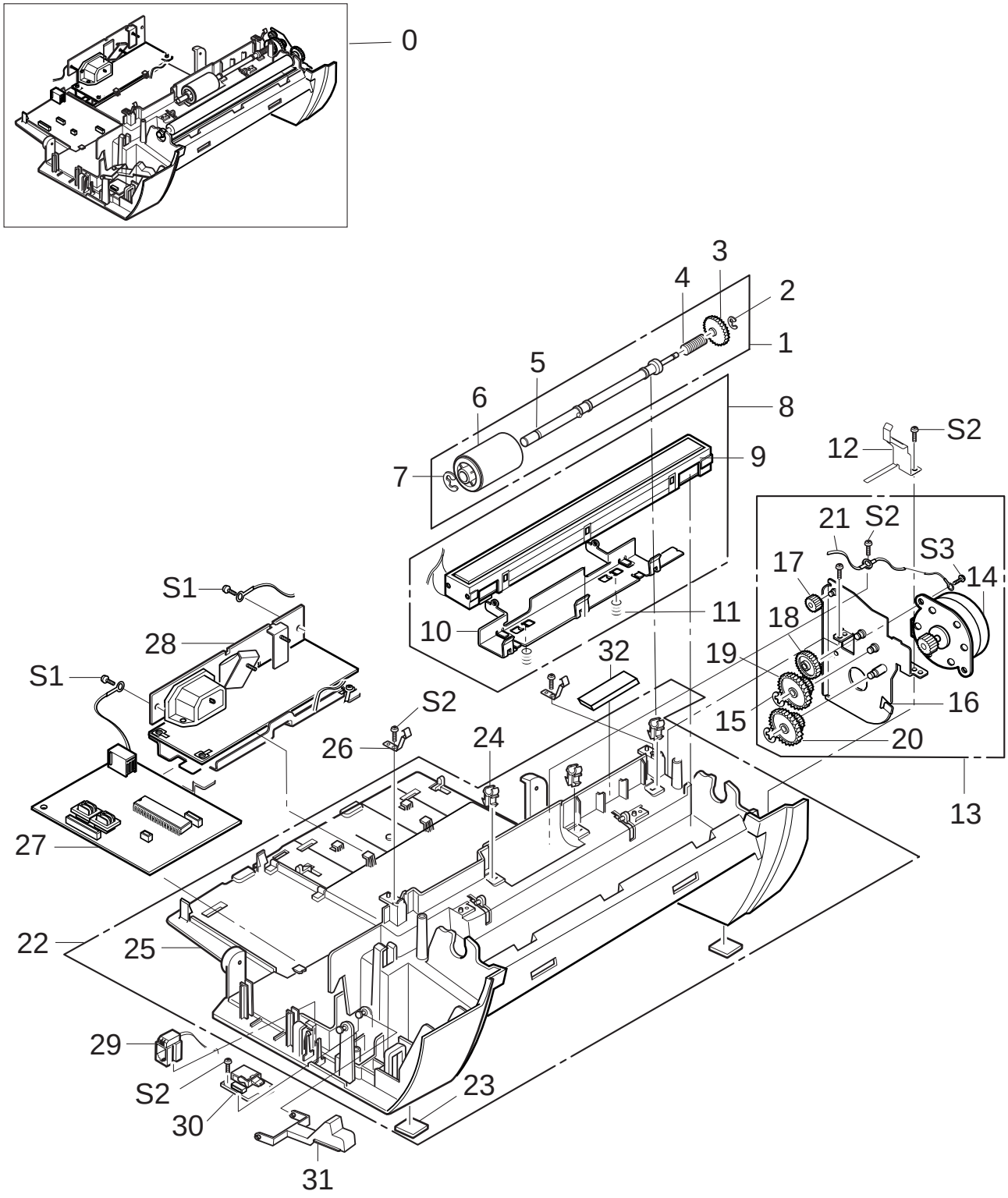
Location No.	Description	SEC. Code	Q'ty	Remark
0	ELA UNIT-ENGIN(AT)	*	1	
1	PBA MAIN-MAIN	JG92-01035A	1	SF3000
		JG92-01035B	1	SF3000T
2	ELA HOU-CR	JB96-00943A	1	
3	PMO-FRAME CR	*	1	
4	PMO-LATCH HEAD	*	1	
5	SPRING-CS	*	1	
6	BELT-TIMING	JB66-20901A	1	
7	PMO-HOLDER FPC	*	1	
8	RMO-CONTACT	*	1	
9	IPR-DEFLECTOR GUIDE	*	1	
10	PCB-FPC CABLE	JB41-10100B	1	
11	PMO-CRADDLE HEAD B	JB72-40243A	1	
12	PMO-DAMPER CR	*	1	
13	MEC-FRAME BASE	JB97-01092A	1	
14	PMO-FRAME BASE	*	1	
15	SPRING-RING	*	2	
16	PMO-PULLEY EXIT	*	2	
17	RMO-RUBBER PULLEY	*	2	
18	PMO-ROLLER EXIT	*	1	
19	REX-FEED EXIT	JB73-20901A	2	
20	IPR-WHEEL STAR(T)	*	6	
21	PMO-HOLDER WHEEL	*	6	
22	PMO-LEVER EXIT	*	4	
23	PMO-HOLDER EXIT	*	1	
24	SPRING-CS(EXIT)	*	6	
25	PMO-LEVER EXIT(2)	*	2	
26	MEA-ROLLER FEED	JB97-00939A	1	
27	GEAR-FEED	*	1	
28	MEC-ROLLER FEED	*	1	
29	SPRING-ES	6107-000003	1	
30	MEA UNIT-BRKT LF	JB97-01091A	1	
31	GEAR-LF IDLE4	*	1	
32	GEAR-LF IDLE3	*	1	
33	GEAR-LF IDLE2	*	1	
34	GEAR-LF IDLE1	*	1	
35	BEARING-FEED L,	*	1	
36	IPR-BRACKET LF MOTOR	*	1	

Location No.	Description	SEC. Code	Q'ty	Remark
37	MOTOR-STEP, DC24V,LF MOTOR	JB31-10102F	1	
38	MEA UNIT-PULLEY IDLE	JB97-01089A	1	
39	PMO-PULLEY IDLE	*	1	
40	PMO-HOLDER PULLEY	*	1	
41	SPRING-CS	*	1	
42	SPRING-CR SHAFT	JB61-70007A	1	
43	ICT-SHAFT CR	JB70-40901A	1	
44	MEC-FRAME MAIN	JB75-11097A	1	
45	CABLE CLAMP	*	2	
46	IPR-FRAME MAIN	*	1	
47	MOTOR-STEP,CR MOTOR	JB31-10102C	1	CR MOTOR
48	MEA ETC-ROLLER, SUB	JB97-00240A	1	
49	PMO-HOLDER ROLLER	*	1	
50	PMO-ACTUATOR FEED	*	1	
51	SPRING-ACTUATOR	*	1	
52	MEA-FRICTION ROLLER	JB97-00938A	1	
53	SPRING-FRICTION	*	1	
54	PMO-HOLDER FRICTION	*	1	
55	ICT-ROLLER FRICTION	*	1	
56	MEA UNIT-FRAME HOME	JB97-01090A	1	
57	RMO-CAP, HEAD	*	1	
58	PMO-HOLDER CAP	*	1	
59	SPRING-CS	*	1	
60	RMO-WIPER, HEAD	*	1	
61	PMO-GUIDE CAP	*	1	
62	PMO-GUIDE WIPPER	*	1	
63	SPRING-LEVER	*	1	
64	PMO-LEVER WIPER	*	1	
65	PMO-FRAME HOME	*	1	
66	BEARING GEED(R)	JB66-10002A	1	
67	ELA HOU-HOME	JB96-00930A	1	
68	MEA-ASF ASSY	JB97-01093A	1	
69	PMO-GUIDE PAPER SIDE	JB72-40918A	1	
70	PMO-PLATE KNOCK UP	*	1	
71	IPR-GUIDE LATCH	*	1	
72	PMO-LEVER DAMPER	*	1	
73	PMO-ACTUATOR PE	*	1	
74	PMO-GUIDE ENVELOPE	JB72-40951A	1	
75	MMP-PAD	*	2	

Location No.	Description	SEC. Code	Q'ty	Remark
76	PMO-GUIDE EXTENSION	JB72-40218A	1	
77	PMO-FRAME ASF	*	1	
78	MEC-CLUTCH	JB75-10931A	1	
79	PMO-HUB CLUTCH	*	1	
80	SPRING-CLUTCH	*	1	
81	PMO-RATCHET CLUTCH	*	1	
82	SPRING-RATCHET	*	1	
83	GEAR-CLUTCH	*	1	
84	PMO-STOPPER CLUTCH	JB72-40929A	1	
85	PPR-SHEET ASF	*	1	
86	SPRING-ES, PI0.2, D13.3, L13	*	1	
87	PMO-CAM PICK UP	*	1	
88	PMO-FINGER ASF	*	1	
89	SPRING-ES, PI0.2, D3.4, L13	*	1	
90	SPRING-FINGER LEVER	*	1	
91	PMO-LEVER FINGER	*	1	
92	IPR-BRACKET FINGER	*	1	
93	RMO-RUBBER PICK UP	*	2	
94	PMO-ROLLER IDLE	*	6	
95	PMO-SHAFT PICK UP	*	1	
96	SPRING-RETURN LEVER	*	1	
97	PMO-LEVER RETURN	*	1	
98	PMO-BUSHING LEVER	*	2	
99	PHOTO-INTERRUPTER,PAPER EMPTY	*	1	
100	CBF HARNESS-PES	*	1	MAIN-PEMPTY
S1	SCREW-TAPTITE, BH, +, M3, L5.5	6003-001016	3	
S2	SCREW-TAPTITE, BH, +, S, M3. L5	6003-000126	8	
S3	SCREW-TAPTITE, BH, +, M3, L4	6003-000008	1	
S4	SCREW-TAPPING, WPH, +, 2, M3, L8	6002-000175	3	
S5	SCREW-TAPPING, BH, +, M3, L10	6002-000101	2	

*: service not Available

1-5. Base Unit Assembly



Base Unit Assembly Parts Lists

Location No.	Description	SEC. Code	Q'ty	Remark
0	ELA UNIT-BASE	*	1	
1	MEA ETC-ROLLER ADF	JB97-01088A	1	
2	RING-C, ID3, OD7, T0.6	*	1	
3	GEAR-GEAR ADF(AT)	*	1	
4	ICT-SPRING CLUTCH	*	1	
5	PMO-SHAFT ADF	*	1	
6	MEC-ROLLER ADF	*	1	
7	RING-C, ID5, OD11, T0.6	*	1	
8	ELA UNIT-CIS	JB96-00939A	1	
9	CONTACT IMAGE SENSOR	0609-001066	1	
10	IPR-GUIDE CIS	JB70-10945A	1	
11	SPRING-CIS	JB61-70938A	2	
12	IPR-PLATE GROUND	JB70-10944A	1	
13	ELA UNIT-SCAN MOTOR	JB96-00947A	1	
14	MOTOR-STEP, 7.5 deg, 24 V	3101-001150	1	
15	RING-C, ID2.5, OD6, T0.4	*	2	
16	IPR-BRACKET MOTOR	*	1	
17	PMO-GEAR CLUTCH	*	1	
18	PMO-GEAR IDLE(B)	*	1	
19	PMO-GEAR IDLER	*	1	
20	PMO-GEAR TRANS(B4)	*	1	
21	CBF-HARNESS:EARTH	*	1	
22	MEC-BASE	JB75-11088A	1	
23	FOOT	*	2	
24	PMO-BUSHING	*	1	
25	PMO-BASE	*	1	
26	LOCKER-TX	JG64-30001A	2	
27	PBA SUB I/F-LIU	JB92-00974A	1	SF3000
		JB92-01020A	1	SF3000T
28	SMPS-V2:8F3000,AC/DC	JG44-10057A	1	
29	CBF HARNESS-HANDSET	JB39-40527A	1	
30	PBA ETC-HOOK	JG92-01037A	1	
31	PMO-HOOK	JB72-41241A	1	
32	MPR-FELT INK	JG74-10505A	1	
S1	SCREW-TAPTITE, BH, +, M3, L5	6003-000126	2	
S2	SCREW-TAPTITE, BH, +, M3, L8	6003-000259	5	
S3	SCREW-TAPTITE, BH, +, B, M3, L6	6003-000261	1	

*: service not Available

MEMO

9. Electrical Parts Lists

9-1. MAIN PBA

9-1-1. SF3000 MAIN PBA

Ref. No.	Description	SEC. Code	Remark
	ASSEMBLY, MAIN PBA, SF3000	**JG92-01035A**	
	- Capacitors -		
C1	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C2	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C3	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C4	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C5	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C6	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C7	C-CERMIC, CHIP, 68 pF, 5 %, 50 V	2003-001158	
C8	C-CERMIC, CHIP, 15 pF, 5 %, 50 V	2003-001517	
C9	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C10	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C11	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C12	C-CERMIC, CHIP, 120 pF, 5 %, 50 V	2003-000316	
C13	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C14	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C16	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C17	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C18	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C19	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C20	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C21	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
C22	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C23	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C25	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C26	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C27	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C28	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C29	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C30	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C31	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C32	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C33	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C34	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	

Ref. No.	Description	SEC. Code	Remark
C35	C-CERMIC, CHIP, 68 nF, 10 %, 25 V	2003-001142	
C37	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C38	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C39	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C40	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C41	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C42	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C43	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C44	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C45	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C46	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C47	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C49	C-CERMIC, CHIP, 4.7 nF, 10 %, 50 V	2003-000891	
C50	C-CERMIC, CHIP, 47 nF, 10 %, 50 V	2003-000979	
C54	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C55	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C56	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C57	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C58	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C59	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C60	C-CERMIC, CHIP, 18 pF, 5 %, 50 V	2003-000429	
C61	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C63	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C64	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C65	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C67	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C68	C-CERMIC, CHIP, 10 nF, 10 %, 50 V	2003-000260	
C73	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C74	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C75	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C76	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C77	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C78	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C79	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C80	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C81	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C82	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C83	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C85	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	

Ref. No.	Description	SEC. Code	Remark
C86	C-CERMIC, CHIP, 27 pF, 5 %, 50 V	2003-000683	
C87	C-CERMIC, CHIP, 27 pF, 5 %, 50 V	2003-000683	
C96	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C97	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C99	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C98	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C100	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C102	C-AL, 47 µF, 20 %, 16 V	2401-000031	
C103	C-TA, CHIP, 1 µF, 20 %, 10 V	2404-000291	
C104	C-AL, 100 µF, 20 %, 16 V	2401-000042	
C105	C-AL, 22 µF, 20 %, 16 V	2401-000913	
C106	C-TA, CHIP, 10 µF, 20 %, 6.3 V	2404-000141	
C107	C-AL, 47 µF, 20 %, 16 V	2401-000031	
C108	C-AL, 47 µF, 20 %, 16 V	2401-000031	
C109	C-AL, 1000 µF, 20 %, 35 V	2401-000172	
C110	C-AL, 10 µF, 20 %, 16 V	2401-000414	
C111	C-AL, 22 µF, 20 %, 16 V	2401-000913	
C113	C-TA, CHIP, 470 nF, 20 %, 16 V	2404-000312	
C116	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C117	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C118	C-AL, 100 µF, 20 %, 16 V	2401-000042	
C119	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C120	C-CERMIC, CHIP, 15 pF, 5 %, 50 V	2003-001517	
C122	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C123	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C124	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C125	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C126	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C127	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C128	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C129	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C130	C-CERMIC, CHIP, 220 nF, +80-20 %, 25 V	2003-000563	
C131	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C133	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C134	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
	- Diodes -		
D1	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D3	DIODE-RECTIFIER, 1N4002, 100 V, 1 A	0402-000371	
D4	DIODE-SCHOTTKY, RB420D, 25 V, 100 mA	0404-000112	

Ref. No.	Description	SEC. Code	Remark
D5	DIODE-SCHOTTKY, RB420D, 25 V, 100 mA	0404-000112	
D6	DIODE-SCHOTTKY, RB420D, 25 V, 100 mA	0404-000112	
D8	DIODE-ARRAY, DAP202K, 80 V, 100mA	0407-000116	
D9	DIODE-ARRAY, DAP202K, 80 V, 100mA	0407-000116	
ZD4	DIODE-ZENER, PTZ5.1B, 5.1B, 5.1 V	0403-000464	
ZD5	DIODE-ZENER, MMBZ5249BL, 5 %, 225 mW	0403-000286	
	- ICs -		
U1	IC ASIC-JUPITER 2, MJ-715S, KS32C6500, 160 P	JB13-10503B	
U2	IC-ASIC-IMAGE CHIP, STOA7110, QFP, 238 P	JG13-10062A	
U3	IC-MODEM, KS16117Q, QFP, 100 P	1205-001134	
U4	IC-OP AMP, 82, SOP, 8 P	1201-000178	
U5	IC-DRAM, 416C256, 256K x 16BIT, 40 P	1105-001029	
U6	IC-DRAM, 416C256, 256K x 16BIT, 40 P	1105-001029	
U9	IC-SRAM, 68257, 32K x 8BIT, 28 P	1106-001012	
U11	IC-DECODER, A5817SEP, QFP, 44 P	1204-000359	
U12	IC-DECODER, A5817SEP, QFP, 44 P	1204-000359	
U13	IC-OP AMP, 358, SOP, 8 P	1201-000167	
U14	IC-MOTOR DRIVER, PBL3717A, DIP, 16 P	1003-000243	
U15	IC-MOTOR DRIVER, PBL3717A, DIP, 16 P	1003-000243	
U19	FREQ-ATTENUATOR, 5-8 MHz, 15dB, 0.03 W	4701-001020	
U20	IC-OP AMP, 4558, SOP, 8 P	1201-000189	
U21	IC-OP AMP, 4558, SOP, 8 P	1201-000189	
U22	IC-OP AMP, 4558, SOP, 8 P	1201-000189	
U23	IC-AUDIO AMP, 386, SOP, 8 P	1201-000114	
U24	IC-ANALOG SWITCH, MC14053BD, 16 P	1001-000171	
U26	IC-ANALOG SWITCH, MC14051BD, 16 P	1001-000170	
U27	TR-ARRAY, ULN2003L, NPN, 1 W	0506-000182	
U28	IC-EPROM. 27C240, 256K x 16 BIT, DIP, 40 P	1102-001051	
U28	SOCKET-IC, 40 P, DIP	3704-000275	SOCKET
U30	IC-SRAM, 62256B, 32K x 8BIT, 28 P	1106-000197	
U31	PHOTO-INTERRUPTER, TR, 150 mW	0604-001033	
U32	IC-CMOS LOGIC, 74HC00, NAND GATE, 14 P	0801-000379	
U33	IC-RESET, 7045, T0-92, 3 P	1203-000495	
U128	TR-ARRA, STA471A, NPN, 4 W	0506-001019	
	- Resistors -		
R2	R-CHIP, 1.5 Kohm, 5 %, 1/10 W	2007-000241	
R4	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R5	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R6	R-CHIP, 86.6 Kohm, 1 %, 1/10 W	2007-001220	

Ref. No.	Description	SEC. Code	Remark
R7	R-CHIP, 150 Kohm, 5 %, 1/10 W	2007-000395	
R8	R-CHIP, 118 Kohm, 1 %, 1/10 W	2007-000325	
R10	R-CHIP, 620 ohm, 5 %, 1/10 W	2007-001092	
R11	R-CHIP, 82 Kohm, 5 %, 1/10 W	2007-001208	
R12	R-CHIP, 150 Kohm, 5 %, 1/10 W	2007-000395	
R13	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R14	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R15	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R16	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R20	R-CHIP, 200 ohm, 5 %, 1/10 W	2007-000026	
R21	R-CHIP, 200 ohm, 5 %, 1/10 W	2007-000026	
R22	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R23	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
R24	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R25	R-CHIP, 330 ohm, 5 %, 1/10 W	2007-000766	
R26	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R27	R-CHIP, 47.5 Kohm, 1 %, 1/10 W	2007-000920	
R28	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R29	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R30	R-CHIP, 17.4 Kohm, 1 %, 1/10 W	2007-000435	
R31	R-CHIP, 86.6 Kohm, 1 %, 1/10 W	2007-001220	
R32	R-CHIP, 51 Kohm, 5 %, 1/10 W	2007-001009	
R33	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R34	R-CHIP, 24 Kohm, 5 %, 1/10 W	2007-000615	
R35	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R36	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R40	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R41	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R42	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R43	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R45	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R46	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R47	R-CHIP, 2 Kohm, 5 %, 1/10 W	2007-000671	
R48	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R50	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R51	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R52	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R53	R-CHIP, 7.5 Kohm, 5 %, 1/10 W	2007-001141	
R54	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	

Ref. No.	Description	SEC. Code	Remark
R55	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R56	R-CHIP, 1 Mohm, 5 %, 1/10 W	2007-000477	
R59	R-CHIP, 10 ohm, 5 %, 1/10 W	2007-000308	
R68	R-CHIP, 820 ohm, 5 %, 1/10 W	2007-001201	
R69	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R70	R-CHIP, 15 Kohm, 5 %, 1/10 W	2007-000409	
R71	R-CHIP, 24 Kohm, 5 %, 1/10 W	2007-000615	
R72	R-CHIP, 1 Mohm, 5 %, 1/10 W	2007-000477	
R73	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R74	R-CHIP, 10 Mohm, 5 %, 1/10 W	2007-000304	
R78	R-CHIP, 3.6 Kohm, 5 %, 1/10 W	2007-000703	
R79	R-CHIP, 3.6 Kohm, 5 %, 1/10 W	2007-000703	
R83	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R84	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R85	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R86	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R87	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R88	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R89	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R90	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R91	R-CHIP, 10 Mohm, 5 %, 1/10 W	2007-000304	
R92	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R94	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R95	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R96	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R97	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R98	R-CHIP, 5.1 Kohm, 5 %, 1/10 W	2007-000964	
R99	R-CHIP, 56 Kohm, 5 %, 1/10 W	2007-001039	
R100	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R101	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R105	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R106	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R107	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R108	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R109	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R110	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R111	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R112	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R114	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	

Ref. No.	Description	SEC. Code	Remark
R121	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R122	R-CHIP, 5.1 Kohm, 5 %, 1/10 W	2007-000964	
R123	R-CHIP, 1.2 Kohm, 5 %, 1/10 W	2007-000221	
R124	R-CHIP, 56 Kohm, 5 %, 1/10 W	2007-001039	
R125	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R126	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R127	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R128	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R129	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R131	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R132	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R135	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
R136	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R138	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R145	R-CHIP, 5.1 Kohm, 5 %, 1/10 W	2007-000964	
R146	R-CHIP, 39 ohm, 5 %, 1/10 W	2007-000028	
R147	R-CHIP, 39 ohm, 5 %, 1/10 W	2007-000028	
R148	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R149	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R152	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R153	R-CHIP, 2 Kohm, 5 %, 1/10 W	2007-000671	
R155	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R156	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R157	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R158	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R159	R-CHIP, 20 ohm, 5 %, 1/4 W	2007-001289	
R160	R-CARBON, 0.5 ohm, 5 %, 1/2 W	2001-000202	
R161	R-CHIP, 100 Kohm, 5 %, 1/10 W	2007-000282	
R162	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R163	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R166	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R167	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R168	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R169	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R172	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
	- Transistors -		
Q2	TR-SMALL SIGNAL, KSC5019-MTA, NPN, 750 mW	0501-000342	
Q3	TR-SMALL SIGNAL, KSC1623-Y, NPN, 200 mW	0501-000342	
Q6	TR-SMALL SIGNAL, MMTB2222A, NPN, 225 mW	0501-000457	

Ref. No.	Description	SEC. Code	Remark
Q7	TR-DARLINGTON, TIP127, PNP, 2 W	0503-000134	
Q8	TR-SMALL SIGNAL, MMTB2222A, NPN, 225 mW	0501-000457	
Q9	TR-SMALL SIGNAL, MMTB2222A, NPN, 225 mW	0501-000457	
	- Micellanceous -		
BT1	BATTERY-LI, 3 V, 220 mAH	4301-000108	
L1	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L3	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L5	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L6	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L7	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L8	INDUCTOR-SMD, 10 µH, 10 %, 1.25 x 2 x 1.25 mm	2703-000125	
L9	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
P1	CONNECTOR-HEADER, 3 WALL, 13 P	3711-000417	
P2	CONNECTOR-HEADER, 3 WALL, 3 P	3711-000452	
P3	CONNECTOR-HEADER, 1 WALL, 6 P	3711-000280	
P4	CONNECTOR-HEADER, 3 WALL, 5 P	3711-000484	
P5	CONNECTOR-HEADER, 3 WALL, 10 P	3711-000398	
P6	CONNECTOR-FPC/FC/PIC, 30 P, 1.0 mm	3708-001058	
P7	CONNECTOR-HEADER, 3 WALL, 6 P	3711-000496	
P8	CONNECTOR-HEADER, BOX, 3 P	3711-000907	WHITE
P9	CONNECTOR-HEADER, BOX, 6 P	3711-001062	WHITE
P10	CONNECTOR-HEADER, 3 WALL, 2 P	3711-000443	
P11	CONNECTOR-FPC/FC/PIC, 30 P, 1.0 mm	3708-001058	
P12	CONNECTOR-HEADER, 1 WALL, 4 P	3711-000225	
PCB	PCB-MAIN	JG41-10124A	
RA1	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA2	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA3	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA4	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA5	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA6	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA7	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA8	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA9	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA10	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA11	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA12	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
X1	CRYSTAL-UNIT, 30 MHz, 50 ppm	2801-003582	
X2	CRYSTAL-UNIT, 38.00053 MHz, 15 ppm	2801-003330	

Ref. No.	Description	SEC. Code	Remark
X4	CRYSTAL-UNIT, 32.768 KHz, 5 ppm	2801-001498	

9-1-2. SF3000T MAIN PBA

Ref. No.	Description	SEC. Code	Remark
	ASSEMBLY, MAIN PBA, SF3000T	**JG92-01035B**	
	- Capacitors -		
C1	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C2	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C3	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C4	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C5	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C6	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C7	C-CERMIC, CHIP, 68 pF, 5 %, 50 V	2003-001158	
C8	C-CERMIC, CHIP, 15 pF, 5 %, 50 V	2003-001517	
C9	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C10	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C11	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C12	C-CERMIC, CHIP, 120 pF, 5 %, 50 V	2003-000316	
C13	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C14	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C15	C-CERMIC, CHIP, 47 nF, 10 %, 50 V	2003-000979	
C16	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C17	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C18	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C19	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C20	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C21	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
C22	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C23	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C24	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C25	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C26	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C27	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C28	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C29	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C30	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C31	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C32	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	

Ref. No.	Description	SEC. Code	Remark
C33	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C34	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C35	C-CERMIC, CHIP, 68 nF, 10 %, 25 V	2003-001142	
C36	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C37	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C38	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C39	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C40	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C41	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C42	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C43	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C44	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C45	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C46	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C47	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C48	C-CERMIC, CHIP, 470 pF, 5 %, 50 V	2003-000953	
C49	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C50	C-CERMIC, CHIP, 47 nF, 10 %, 50 V	2003-000979	
C51	C-CERMIC, CHIP, 47 nF, 10 %, 50 V	2003-000979	
C52	C-CERMIC, CHIP, 10 nF, 10 %, 50 V	2003-000260	
C53	C-CERMIC, CHIP, 47 nF, 10 %, 50 V	2003-000979	
C54	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C55	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C56	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C57	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C58	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C59	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C60	C-CERMIC, CHIP, 18 pF, 5 %, 50 V	2003-000429	
C61	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C62	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C63	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C64	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C65	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C66	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C67	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C68	C-CERMIC, CHIP, 10 nF, 10 %, 50 V	2003-000260	
C69	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C70	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C71	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	

Ref. No.	Description	SEC. Code	Remark
C72	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C73	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C74	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C75	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C76	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C77	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C78	C-CERMIC, CHIP, 560 pF, 5 %, 50 V	2003-001058	
C79	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C80	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C81	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C82	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C83	C-CERMIC, CHIP, 820 pF, 10 %, 50 V	2003-000009	
C84	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C85	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C86	C-CERMIC, CHIP, 27 pF, 5 %, 50 V	2003-000683	
C87	C-CERMIC, CHIP, 27 pF, 5 %, 50 V	2003-000683	
C88	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C89	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C90	C-CERMIC, CHIP, 47 nF, 10 %, 50 V	2003-000979	
C91	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C92	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C93	C-CERMIC, CHIP, 10 pF, 5 %, 50 V	2003-000295	
C94	C-CERMIC, CHIP, 1 nF, 10 %, 50 V	2003-000444	
C95	C-CERMIC, CHIP, 10 pF, 5 %, 50 V	2003-000295	
C96	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C97	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C98	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C99	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C100	C-CERMIC, CHIP, 22 pF, 5 %, 50 V	2003-000634	
C102	C-AL, 47 µF, 20 %, 16 V	2401-000031	
C103	C-TA, CHIP, 1 µF, 20 %, 10 V	2404-000291	
C104	C-AL, 100 µF, 20 %, 16 V	2401-000042	
C105	C-AL, 22 µF, 20 %, 16 V	2401-000913	
C106	C-TA, CHIP, 10 µF, 20 %, 6.3 V	2404-000141	
C107	C-AL, 47 µF, 20 %, 16 V	2401-000031	
C108	C-AL, 47 µF, 20 %, 16 V	2401-000031	
C109	C-AL, 1000 µF, 20 %, 35 V	2401-000172	
C110	C-AL, 10 µF, 20 %, 16 V	2401-000414	
C111	C-AL, 22 µF, 20 %, 16 V	2401-000913	

Ref. No.	Description	SEC. Code	Remark
C112	C-TA, CHIP, 1 µF, 20 %, 10 V	2404-000291	
C113	C-TA, CHIP, 470 nF, 20 %, 16 V	2404-000312	
C114	C-TA, CHIP, 10 µF, 20 %, 6.3 V	2404-000141	
C115	C-TA, CHIP, 10 µF, 20 %, 6.3 V	2404-000141	
C116	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C117	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C118	C-AL, 100 µF, 20 %, 16 V	2401-000042	
C119	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C120	C-CERMIC, CHIP, 15 pF, 5 %, 50 V	2003-001517	
C122	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C123	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C124	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C125	C-CERMIC, CHIP, 100 nF, 79.8, 50 V	2003-000192	
C126	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C127	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C128	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C129	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C130	C-CERMIC, CHIP, 220 nF, +80-20 %, 25 V	2003-000563	
C131	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C133	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
C134	C-CERMIC, CHIP, 100 pF, 5 %, 50 V	2003-000239	
	- Diodes -		
D1	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D2	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D3	DIODE-RECTIFIER, 1N4002, 100 V, 1 A	0402-000371	
D4	DIODE-SCHOTTKY, RB420D, 25 V, 100 mA	0404-000112	
D5	DIODE-SCHOTTKY, RB420D, 25 V, 100 mA	0404-000112	
D6	DIODE-SCHOTTKY, RB420D, 25 V, 100 mA	0404-000112	
D7	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D8	DIODE-ARRAY, DAP202K, 80 V, 100mA	0407-000116	
D9	DIODE-ARRAY, DAP202K, 80 V, 100mA	0407-000116	
D10	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
ZD1	DIODE-ZENER, PTZ5.1B, 5.1B, 5.1 V	0403-000464	
ZD2	DIODE-ZENER, PTZ12B, 120-135 V	0403-001142	
ZD3	DIODE-ZENER, PTZ12B, 120-135 V	0403-001142	
ZD4	DIODE-ZENER, PTZ5.1B, 5.1B, 5.1 V	0403-000464	
ZD5	DIODE-ZENER, MMBZ5249BL, 5 %, 225 mW	0403-000286	
	- ICs -		
U2	IC-ASIC-IMAGE CHIP, STOA7110, QFP, 238 P	JG13-10062A	

Ref. No.	Description	SEC. Code	Remark
U3	IC-MODEM, KS16117Q, QFP, 100 P	1205-001134	
U4	IC-OP AMP, 82, SOP, 8 P	1201-000178	
U5	IC-DRAM, 416C256, 256K x 16BIT, 40 P	1105-001029	
U6	IC-DRAM, 416C256, 256K x 16BIT, 40 P	1105-001029	
U7	IC-DSP, 6305, 16BIT, 80 P	0904-001068	
U8	IC-CMOS LOGIC, 74HC245, 20 P	0801-000696	
U9	IC-SRAM, 68257, 32K x 8BIT, 28 P	1106-001012	
U10	IC-DRAM, 44C1000, 1M x 4BIT, 20 P	1105-000133	
U11	IC-DECODER, A5817SEP, QFP, 44 P	1204-000359	
U12	IC-DECODER, A5817SEP, QFP, 44 P	1204-000359	
U13	IC-OP AMP, 358, SOP, 8 P	1201-000167	
U14	IC-MOTOR DRIVER, PBL3717A, DIP, 16 P	1003-000243	
U15	IC-MOTOR DRIVER, PBL3717A, DIP, 16 P	1003-000243	
U16	IC-VOLTAGE COMP, 393, 8 P	1202-000164	
U17	IC-CMOS LOGIC, 7S32, 5 P	0801-000795	
U18	IC-VOLTAGE REGULATOR, 78L05, 3 P	1203-001037	
U19	FREQ-ATTENUATOR, 5-8 MHz, 15dB, 0.03 W	4701-001020	
U20	IC-OP AMP, 4558, SOP, 8 P	1201-000189	
U21	IC-OP AMP, 4558, SOP, 8 P	1201-000189	
U22	IC-OP AMP, 4558, SOP, 8 P	1201-000189	
U23	IC-AUDIO AMP, 386, SOP, 8 P	1201-000114	
U24	IC-ANALOG SWITCH, MC14053BD, 16 P	1001-000171	
U25	IC-ANALOG SWITCH, MC14053BD, 16 P	1001-000171	
U26	IC-ANALOG SWITCH, MC14051BD, 16 P	1001-000170	
U27	TR-ARRAY, ULN2003L, NPN, 1 W	0506-000182	
U28	IC-EPROM. 27C240, 256K x 16 BIT, DIP, 40 P	1102-001051	
U28	SOCKET-IC, 40 P, DIP	3704-000275	SOCKET
U29	IC-CODEC, TP3054J, 16 P	1205-000120	
U30	IC-SRAM, 62256B, 32K x 8BIT, 28 P	1106-000197	
U31	PHOTO-INTERRUPTER, TR, 150 mW	0604-001033	
U32	IC-CMOS LOGIC, 74HC00, NAND GATE, 14 P	0801-000379	
U33	IC-RESET, 7045, T0-92, 3 P	1203-000495	
U34	IC-CMOS LOGIC, 7S32, 5 P	0801-000795	
U128	TR-ARRA, STA471A, NPN, 4 W	0506-001019	
	- Resistors -		
R2	R-CHIP, 1.5 Kohm, 5 %, 1/10 W	2007-000241	
R3	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R4	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R5	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	

Ref. No.	Description	SEC. Code	Remark
R6	R-CHIP, 86.6 Kohm, 1 %, 1/10 W	2007-001220	
R7	R-CHIP, 150 Kohm, 5 %, 1/10 W	2007-000395	
R8	R-CHIP, 118 Kohm, 1 %, 1/10 W	2007-000325	
R9	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R10	R-CHIP, 620 ohm, 5 %, 1/10 W	2007-001092	
R11	R-CHIP, 82 Kohm, 5 %, 1/10 W	2007-001208	
R12	R-CHIP, 150 Kohm, 5 %, 1/10 W	2007-000395	
R13	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R14	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R15	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R16	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R20	R-CHIP, 200 ohm, 5 %, 1/10 W	2007-000026	
R21	R-CHIP, 200 ohm, 5 %, 1/10 W	2007-000026	
R22	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R23	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
R24	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R25	R-CHIP, 330 ohm, 5 %, 1/10 W	2007-000766	
R26	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R27	R-CHIP, 47.5 Kohm, 1 %, 1/10 W	2007-000920	
R28	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R29	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R30	R-CHIP, 17.4 Kohm, 1 %, 1/10 W	2007-000435	
R31	R-CHIP, 86.6 Kohm, 1 %, 1/10 W	2007-001220	
R32	R-CHIP, 51 Kohm, 5 %, 1/10 W	2007-001009	
R33	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R34	R-CHIP, 24 Kohm, 5 %, 1/10 W	2007-000615	
R35	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R36	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R40	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R41	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R42	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R43	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R45	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R46	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R47	R-CHIP, 2 Kohm, 5 %, 1/10 W	2007-000671	
R48	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R50	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R51	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R52	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	

Ref. No.	Description	SEC. Code	Remark
R53	R-CHIP, 7.5 Kohm, 5 %, 1/10 W	2007-001141	
R54	R-CHIP, 3 Kohm, 5 %, 1/10 W	2007-000844	
R55	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R56	R-CHIP, 1 Mohm, 5 %, 1/10 W	2007-000477	
R57	R-CHIP, 68 Kohm, 5 %, 1/10 W	2007-000001	
R58	R-CHIP, 100 Kohm, 5 %, 1/10 W	2007-000282	
R59	R-CHIP, 10 ohm, 5 %, 1/10 W	2007-000308	
R60	R-CHIP, 3.9 Kohm, 5 %, 1/10 W	2007-000710	
R61	R-CHIP, 33 Kohm, 5 %, 1/10 W	2007-000774	
R62	R-CHIP, 2.2 Kohm, 5 %, 1/10 W	2007-000493	
R63	R-CHIP, 470 ohm, 5 %, 1/10 W	2007-000931	
R64	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R65	R-CHIP, 15 Kohm, 5 %, 1/10 W	2007-000409	
R66	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R67	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R68	R-CHIP, 820 ohm, 5 %, 1/10 W	2007-001201	
R69	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R70	R-CHIP, 15 Kohm, 5 %, 1/10 W	2007-000409	
R71	R-CHIP, 30 Kohm, 5 %, 1/10 W	2007-000738	
R72	R-CHIP, 1 Mohm, 5 %, 1/10 W	2007-000477	
R73	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R74	R-CHIP, 10 Mohm, 5 %, 1/10 W	2007-000304	
R75	R-CHIP, 12 Kohm, 5 %, 1/10 W	2007-000355	
R76	R-CHIP, 12 Kohm, 5 %, 1/10 W	2007-000355	
R77	R-CHIP, 2.2 Kohm, 5 %, 1/10 W	2007-000493	
R78	R-CHIP, 3.6 Kohm, 5 %, 1/10 W	2007-000703	
R79	R-CHIP, 3.6 Kohm, 5 %, 1/10 W	2007-000703	
R80	R-CHIP, 1 Mohm, 5 %, 1/10 W	2007-000477	
R81	R-CHIP, 100 Kohm, 5 %, 1/10 W	2007-000282	
R82	R-CHIP, 100 Kohm, 5 %, 1/10 W	2007-000282	
R83	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R84	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R85	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R86	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R87	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R88	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R89	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R90	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R91	R-CHIP, 10 Mohm, 5 %, 1/10 W	2007-000304	

Ref. No.	Description	SEC. Code	Remark
R92	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R93	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R94	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R95	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R96	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R97	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R98	R-CHIP, 5.1 Kohm, 5 %, 1/10 W	2007-000964	
R99	R-CHIP, 56 Kohm, 5 %, 1/10 W	2007-001039	
R100	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R101	R-CHIP, 300 ohm, 5 %, 1/10 W	2007-000728	
R102	R-CHIP, 470 ohm, 5 %, 1/10 W	2007-000931	
R103	R-CHIP, 3.3 Kohm, 5 %, 1/10 W	2007-000686	
R104	R-CHIP, 1.5 Kohm, 5 %, 1/10 W	2007-000241	
R105	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R106	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R107	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R108	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R109	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R110	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R111	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R112	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R114	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R115	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R116	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R117	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R118	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R119	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R120	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R121	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R122	R-CHIP, 5.1 Kohm, 5 %, 1/10 W	2007-000964	
R123	R-CHIP, 1.2 Kohm, 5 %, 1/10 W	2007-000221	
R124	R-CHIP, 56 Kohm, 5 %, 1/10 W	2007-001039	
R125	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R126	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R127	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R128	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R129	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R131	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R132	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	

Ref. No.	Description	SEC. Code	Remark
R135	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
R136	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R138	R-CHIP, 47 Kohm, 5 %, 1/10 W	2007-000941	
R139	R-CHIP, 680 Kohm, 5 %, 1/10 W	2007-001113	
R140	R-CHIP, 680 Kohm, 5 %, 1/10 W	2007-001113	
R141	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R142	R-CHIP, 82 Kohm, 5 %, 1/10 W	2007-001208	
R143	R-CHIP, 1 Mohm, 5 %, 1/10 W	2007-000477	
R144	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R145	R-CHIP, 5.1 Kohm, 5 %, 1/10 W	2007-000964	
R146	R-CHIP, 39 ohm, 5 %, 1/10 W	2007-000028	
R147	R-CHIP, 39 ohm, 5 %, 1/10 W	2007-000028	
R148	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R149	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R150	R-CHIP, 100 ohm, 5 %, 1/10 W	2007-000290	
R152	R-CHIP, 150 ohm, 5 %, 1/10 W	2007-000401	
R153	R-CHIP, 2 Kohm, 5 %, 1/10 W	2007-000671	
R154	R-CARBON, 0.5 ohm, 5 %, 1/2 W	2001-000202	
R155	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R156	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R157	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R158	R-CHIP, 22.1 ohm, 1 %, 1/2 W	2008-000177	
R159	R-CHIP, 20 ohm, 5 %, 1/4 W	2007-001289	
R160	R-CARBON, 0.5 ohm, 5 %, 1/2 W	2001-000202	
R161	R-CHIP, 100 Kohm, 5 %, 1/10 W	2007-000282	
R162	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R163	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R164	R-CHIP, 300 Kohm, 5 %, 1/10 W	2007-000027	
R165	R-CHIP, 300 Kohm, 5 %, 1/10 W	2007-000027	
R166	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R167	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R168	R-CHIP, 1 Kohm, 5 %, 1/10 W	2007-000468	
R169	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R170	R-CHIP, 12 Kohm, 5 %, 1/10 W	2007-000355	
R171	R-CHIP, 12 Kohm, 5 %, 1/10 W	2007-000355	
	- Transistors -		
Q1	TR-SMALL SIGNAL, KSA1182-Y, PNP, 150 mW	0501-000279	
Q2	TR-SMALL SIGNAL, KSC5019-MTA, NPN, 750 mW	0501-000385	
Q3	TR-SMALL SIGNAL, KSC1623-Y, NPN, 200 mW	0501-000342	

Ref. No.	Description	SEC. Code	Remark
Q4	TR-SMALL SIGNAL, KSC1623-Y, NPN, 200 mW	0501-000342	
Q5	TR-SMALL SIGNAL, KSA1182-Y, PNP, 150 mW	0501-000279	
Q6	TR-SMALL SIGNAL, MMTB2222A, NPN, 225 mW	0501-000457	
Q7	TR-DARLINGTON, TIP127, PNP, 2 W	0503-000134	
Q8	TR-SMALL SIGNAL, MMTB2222A, NPN, 225 mW	0501-000457	
Q9	TR-SMALL SIGNAL, MMTB2222A, NPN, 225 mW	0501-000457	
	- Micellanceous -		
BT1	BATTERY-LI, 3 V, 220 mAH	4301-000108	
L1	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L2	INDUCTOR-SMD, 3.3 µH, 10 %, 1.25 x 2 x 1.25 mm	2703-000185	
L3	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L5	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L6	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L7	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
L8	INDUCTOR-SMD, 10 µH, 10 %, 1.25 x 2 x 1.25 mm	2703-000125	
L9	CORE-FERRITE BEAD, AB, 3.2 x 2.5 x 1.3 mm	3301-000325	
P1	CONNECTOR-HEADER, 3 WALL, 13 P	3711-000417	
P2	CONNECTOR-HEADER, 3 WALL, 3 P	3711-000452	
P3	CONNECTOR-HEADER, 1 WALL, 6 P	3711-000280	
P4	CONNECTOR-HEADER, 3 WALL, 7 P	3711-000502	
P5	CONNECTOR-HEADER, 3 WALL, 10 P	3711-000398	
P6	CONNECTOR-FPC/FC/PIC, 30 P, 1.0 mm	3708-001058	
P7	CONNECTOR-HEADER, 3 WALL, 6 P	3711-000496	
P8	CONNECTOR-HEADER, BOX, 3 P	3711-000907	WHITE
P9	CONNECTOR-HEADER, BOX, 6 P	3711-001062	WHITE
P10	CONNECTOR-HEADER, 3 WALL, 2 P	3711-000443	
P11	CONNECTOR-FPC/FC/PIC, 30 P, 1.0 mm	3708-001058	
P12	CONNECTOR-HEADER, 1 WALL, 4 P	3711-000225	
P13	CONNECTOR-HEADER, 3 WALL, 2 P	3711-000443	
PCB	PCB-MAIN	JG41-10124A	
RA1	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA2	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA3	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA4	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA5	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA6	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA7	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA8	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA9	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	

Ref. No.	Description	SEC. Code	Remark
RA10	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA11	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
RA12	R-NETWORK, 39 ohm, +-5 %, 1/16 W	2011-001094	
X1	CRYSTAL-UNIT, 30 MHz, 50 ppm	2801-003582	
X2	CRYSTAL-UNIT, 38.00053 MHz, 15 ppm	2801-003330	
X3	CRYSTAL-UNIT, 29.4912 KHz, 50 ppm	2801-001530	
X4	CRYSTAL-UNIT, 32.768 KHz, 5 ppm	2801-001498	

9-2. OPE PBA

Ref. No.	Description	SEC. Code	Remark
	ASSEMBLY, OPE PBA	**JG92-01036A**	
	- Capacitors -		
C301	C-AL, 10 µF, 20 %, 16 V	2401-000414	
C302	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C303	C-CERAMIC, CHIP, 47 pF, 5 %, 50 V	2203-001002	
C304	C-CERAMIC, CHIP, 47 pF, 5 %, 50 V	2203-001002	
C305	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C306	C-CERAMIC, CHIP, 100 pF, 5 %, 50 V	2203-000239	
C307	C-CERAMIC, CHIP, 22 pF, 5 %, 50 V	2203-000634	
C308	C-CERAMIC, CHIP, 22 pF, 5 %, 50 V	2203-000634	
C309	C-CERAMIC, CHIP, 22 pF, 5 %, 50 V	2203-000634	
C311	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C312	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C313	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C314	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C315	C-CERAMIC, CHIP, 100 nF, 79.8, 50 V	2203-000192	
C310	C-CERAMIC, CHIP, 100 pF, 5 %, 50 V	2203-000239	
	- Diodes -		
D301	DIODE-ARRAY, KDS226, 80 V, 300 mA	0407-000122	
D302	DIODE-ARRAY, KDS226, 80 V, 300 mA	0407-000122	
D303	DIODE-ARRAY, KDS226, 80 V, 300 mA	0407-000122	
D304	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D305	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D306	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D307	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
D308	DIODE-SWITCHING, MMSD914T1, 100 V, 200 mA	0401-000116	
	- ICs -		
U300	IC MICRO COMPUTER	JF09-10052A	
U301	PHOTO-INTERRUPTER, TR	0604-000231	
U302	PHOTO-INTERRUPTER, TR, 150 mW	0604-001033	
	- Resistors -		
R301	R-CHIP, 200 ohm, 5 %, 1/10 W	2007-000026	
R302	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R303	R-CHIP, 200 ohm, 5 %, 1/10 W	2007-000026	
R304	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R305	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
R306	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	

Ref. No.	Description	SEC. Code	Remark
R307	R-CHIP, 680 ohm, 5 %, 1/10 W	2007-001118	
R308	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R311	R-CHIP, 470 ohm, 5 %, 1/10 W	2007-000931	
R312	R-CHIP, 470 ohm, 5 %, 1/10 W	2007-000931	
R313	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R314	R-CHIP, 470 ohm, 5 %, 1/10 W	2007-000931	
R315	R-CHIP, 470 ohm, 5 %, 1/10 W	2007-000931	
R316	R-CHIP, 10 Kohm, 5 %, 1/10 W	2007-000300	
R317	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R318	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R319	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R320	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R321	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R322	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R323	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R324	R-CHIP, 22 Kohm, 5 %, 1/10 W	2007-000586	
R326	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
R327	R-CHIP, 4.7 Kohm, 5 %, 1/10 W	2007-000872	
	- Micellanceous -		
J300	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J301	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J302	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J303	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J304	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J305	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J306	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J307	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J308	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J309	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J310	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J311	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
J312	R-CHIP, 0 ohm, 5 %, 1/10 W	2007-000029	
P301	CBF HARNESS-OPE	JB39-40521A	OPE-MAIN
P302	CBF HARNESS-OPE	JB39-40525A	OPE-LIU
PCB	PCB-OPE	JG41-10121A	
X300	RESONATOR-CERAMIC, 7.37 MHz, 0.5 %	2802-000185	

9-3. HOOK PBA

Ref. No.	Description	SEC. Code	Remark
	ASSEMBLY, HOOK PBA	**JG92-01037A**	
SWITCH	SWITCH-HOOK, 48 V, 200mA	3409-000118	
LIU	CBF HARNESS-HOOK	JB39-40526A	
PCB	PCB-HOOK	JF41-10692A	

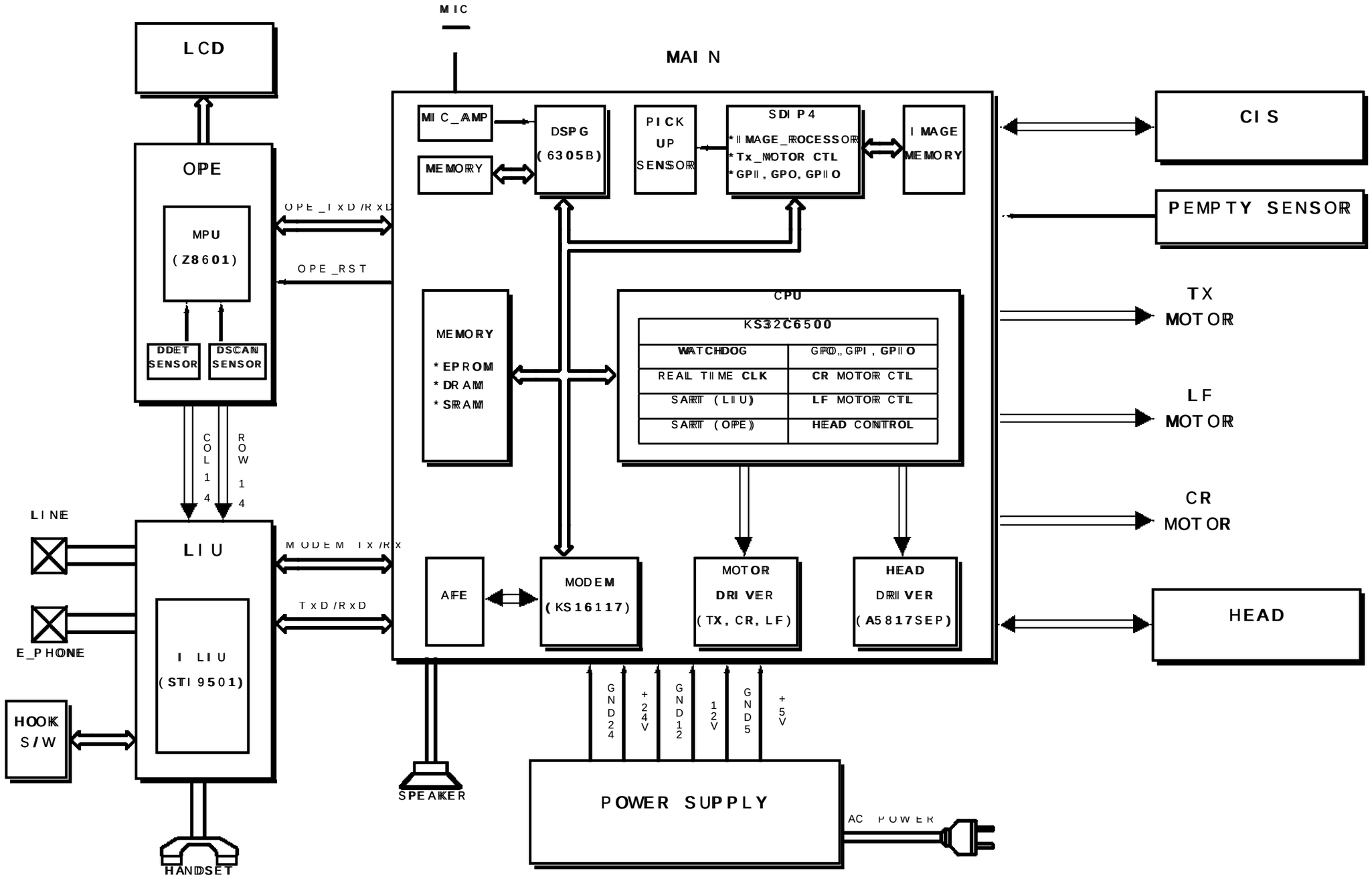
9-4. MIC PBA

Ref. No.	Description	SEC. Code	Remark
	ASSEMBLY, HOOK PBA	**JF92-00625A**	
MIC	MIC-CONDENSOR, 1.5 V, 0.3 mA	3003-000103	
PCB	PCB-H / S MIC	JF41-10589A	
ZD1	DIODE-ZENER, IN4736A, 6.8 A, 5 %, 1 W	0403-000142	

9-5. HOME SENSOR

Ref. No.	Description	SEC. Code	Remark
	ASSEMBLY, HOME SENSOR	**JB96-00930A**	
HARNESS	CBF HARNESS, HOME	JB39-40524A	MAIN-HOME
PCB	PCB-SUB	JB41-10050G	
SENSOR	PHOTO-INTERRUPTER	0604-000156	

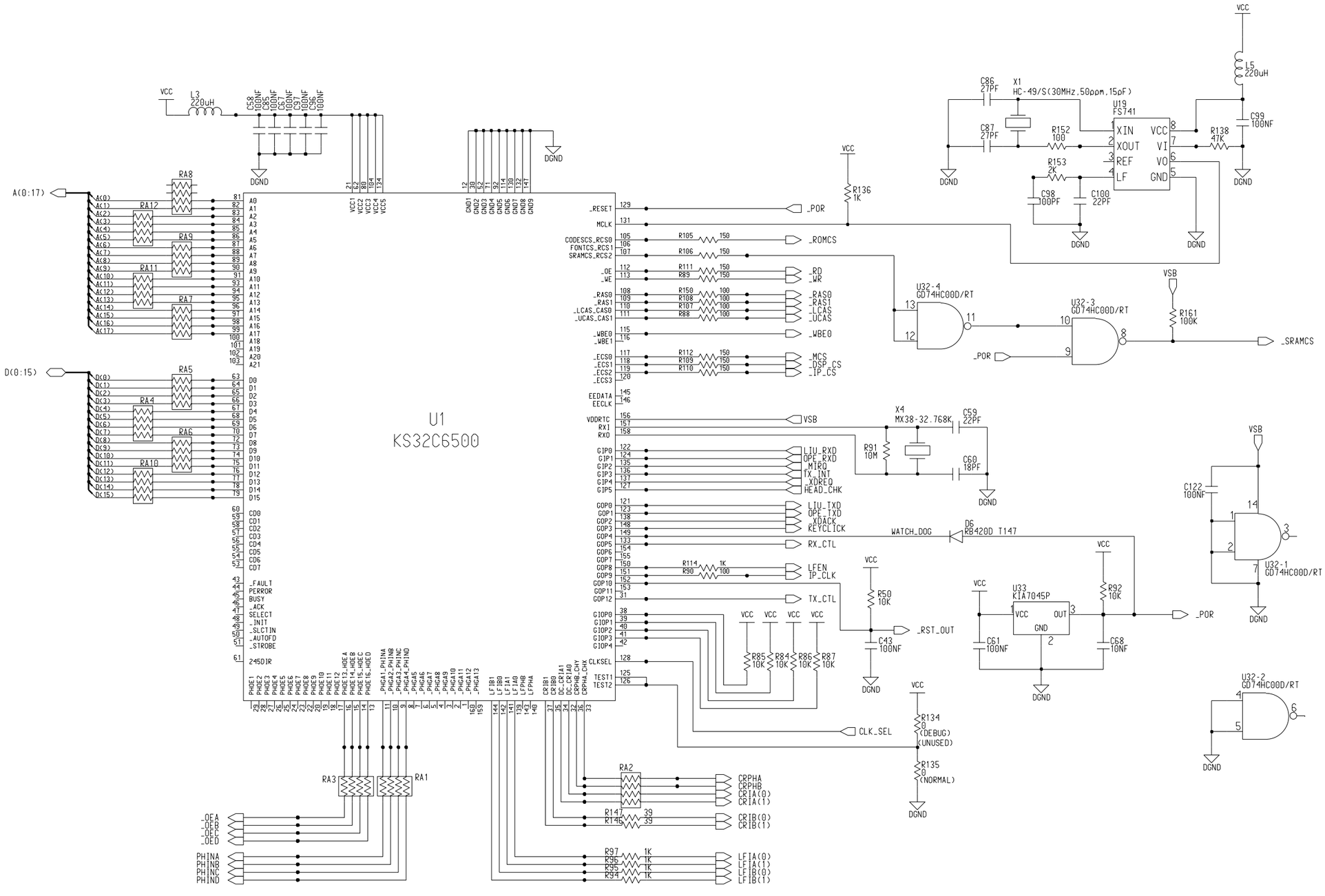
10. Block Diagram



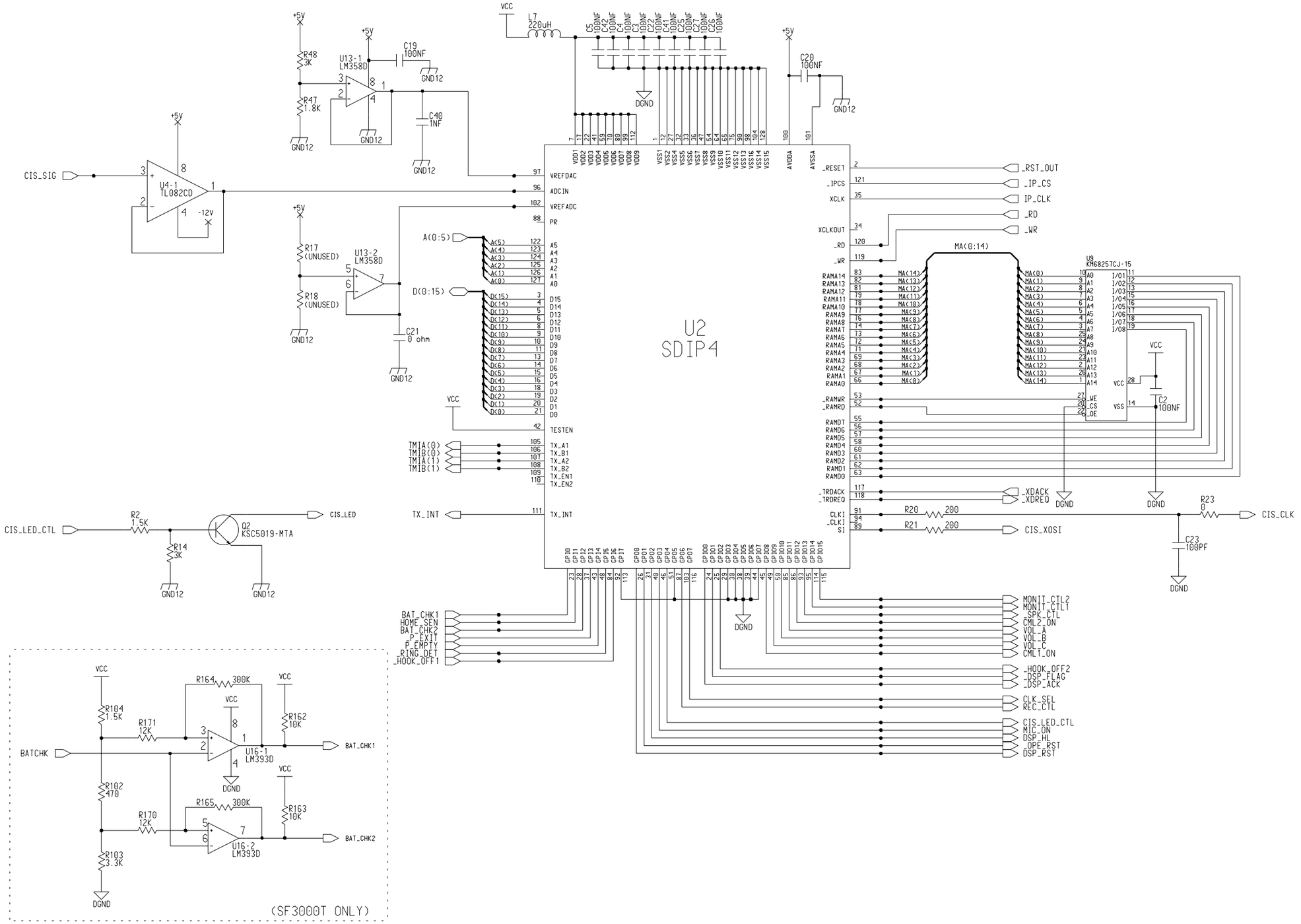
12. Schematic Diagrams

12-1. Main Circuit Diagram

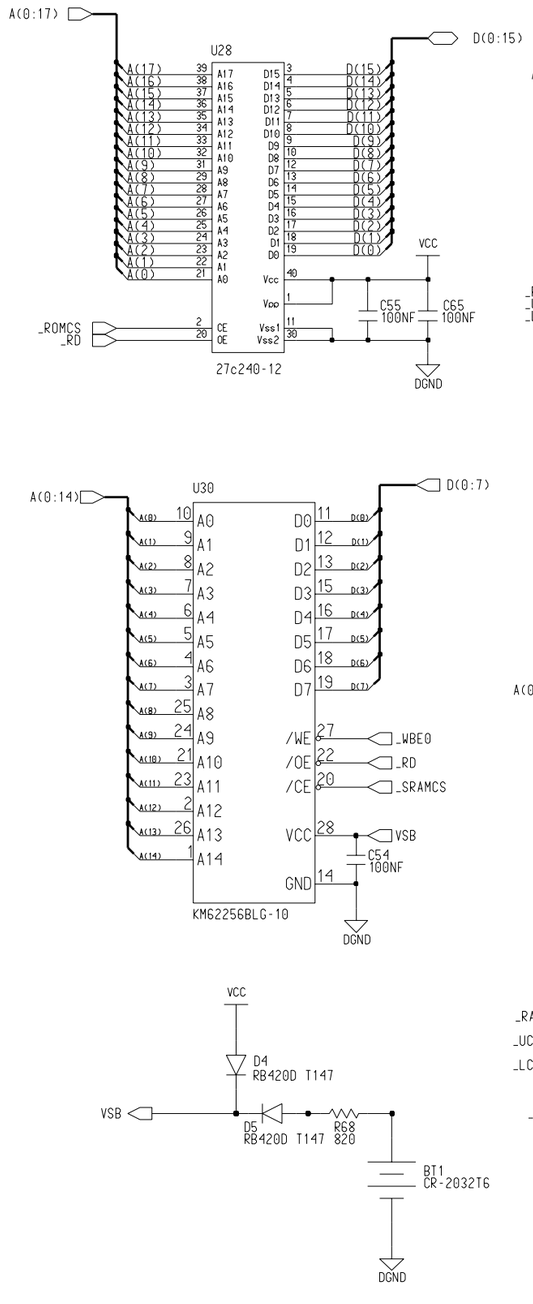
CPU

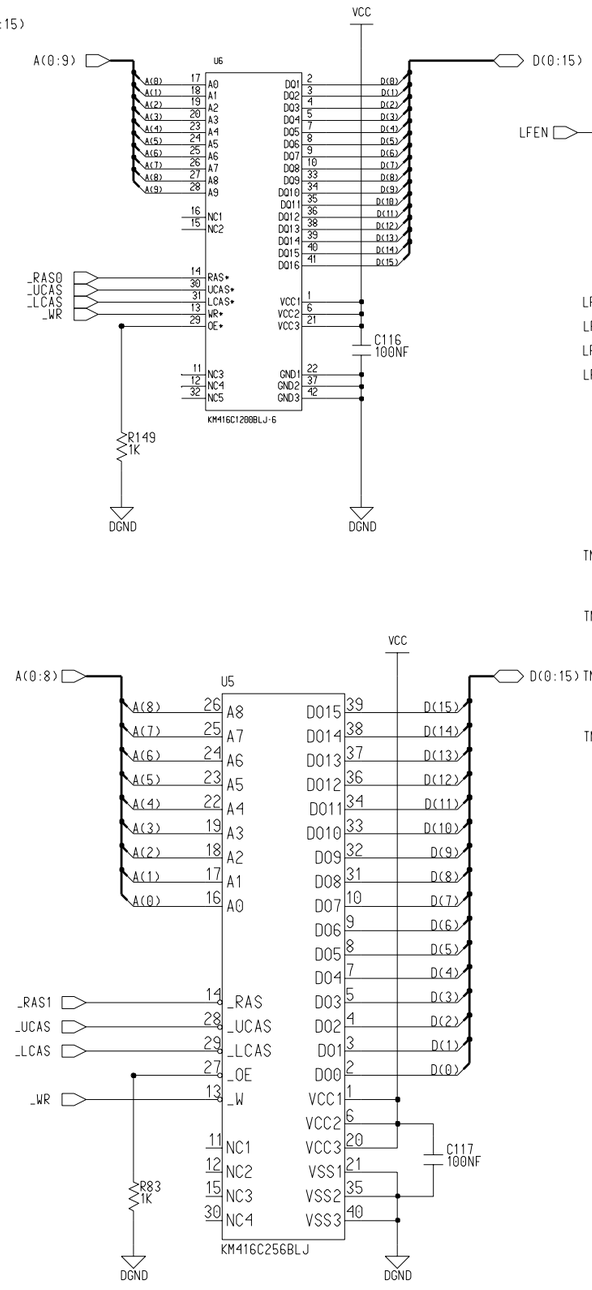


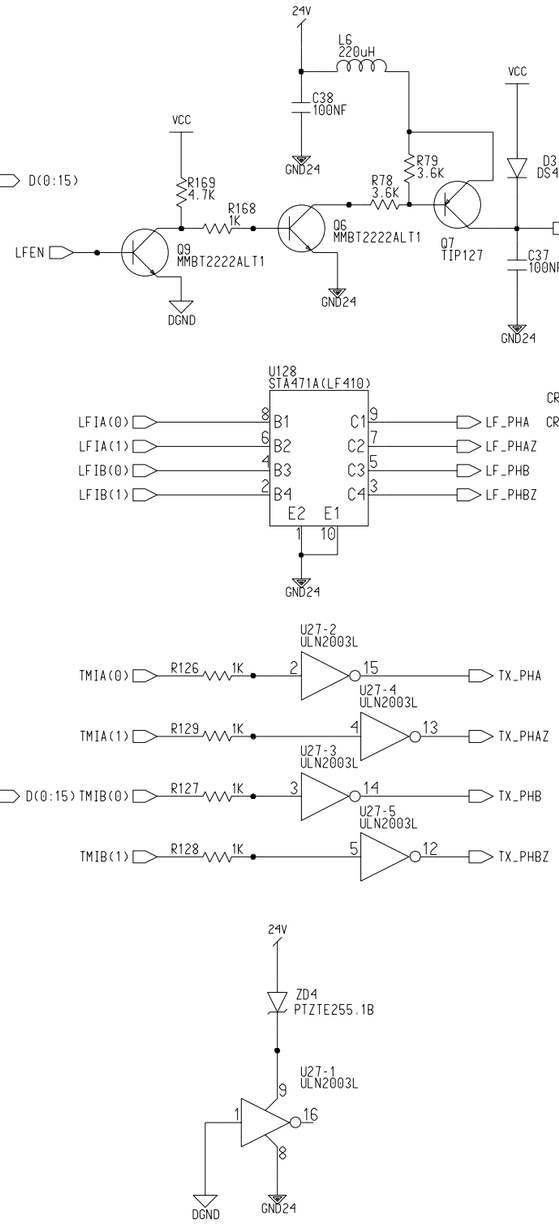
SCAN, I/O

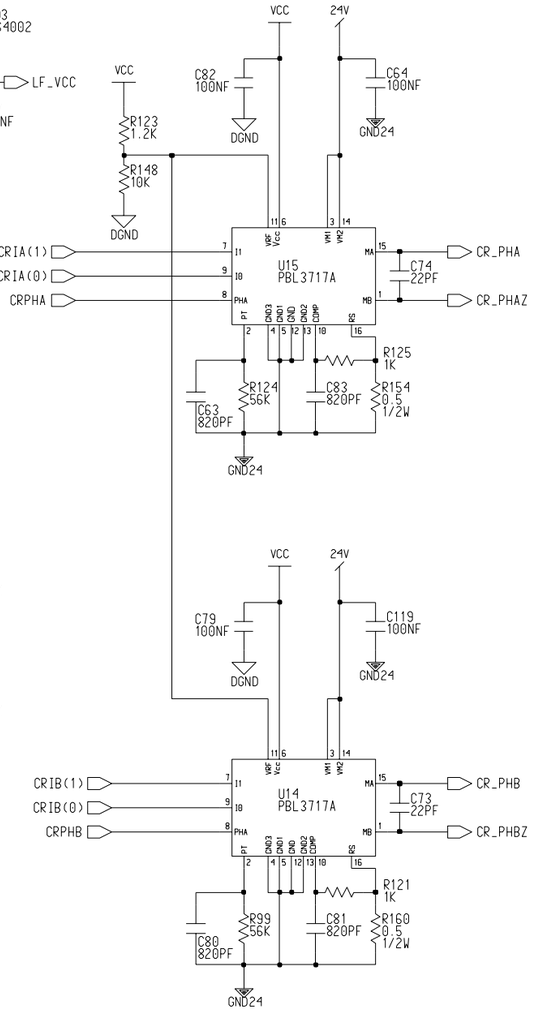

U2
SDIP4
U4-1
TL082CD
U13-1
LM358D
U13-2
LM358D
U16-1
LM393D
U16-2
LM393D
U9
KM68257CJ-15
Q2
KSC5019-MTA
CIS_SIG
CIS_LED_CTL
CIS_LED
BATCHK
BAT_CHK1
BAT_CHK2
TX_INT
VCC
DGND
GND12
-12V
+5V
L7
220uH
C5 100NF
C42 100NF
C4 100NF
C3 100NF
C22 100NF
C41 100NF
C25 100NF
C27 100NF
C26 100NF
C19 100NF
C20 100NF
C40 1NF
C21 0 ohm
C2 100NF
C23 100PF
R48 3K
R47 1.8K
R17 (UNUSED)
R18 (UNUSED)
R2 1.5K
R14 3K
R104 1.5K
R171 12K
R164 300K
R162 10K
R102 470
R170 12K
R165 300K
R163 10K
R103 3.3K
R20 200
R21 200
R23 0
A(0:5)
D(0:15)
MA(0:14)
TMIA(0)
TMIB(0)
TMIA(1)
TMIB(1)
VREFDAC
ADCIN
VREFADC
PR
TESTEN
TX_A1
TX_B1
TX_A2
TX_B2
TX_EN1
TX_EN2
TX_INT
_RESET
_IPCS
XCLK
XCLKOUT
_RD
_WR
_RAMWR
_RAMRD
_TRDACK
_TRDREQ
CLK1
_CLK1
S1
_RST_OUT
_IP_CS
IP_CLK
_RD
_WR
_XDACK
_XDREQ
CIS_XOSI
CIS_CLK
BAT_CHK1
HOME_SEN
BAT_CHK2
P_EXIT
P_EMPTY
RING_DET
HOOK_OFF1
MONIT_CTL2
MONIT_CTLT
SPK_CTL
CML2_ON
VOL_A
VOL_B
VOL_C
CML1_ON
HOOK_OFF2
DSP_FLAG
DSP_ACK
CLK_SEL
REC_CTL
CIS_LED_CTL
MIC_ON
DSP_HL
OPE_RST
DSP_RST
(SF3000T ONLY)

Memory, Motor

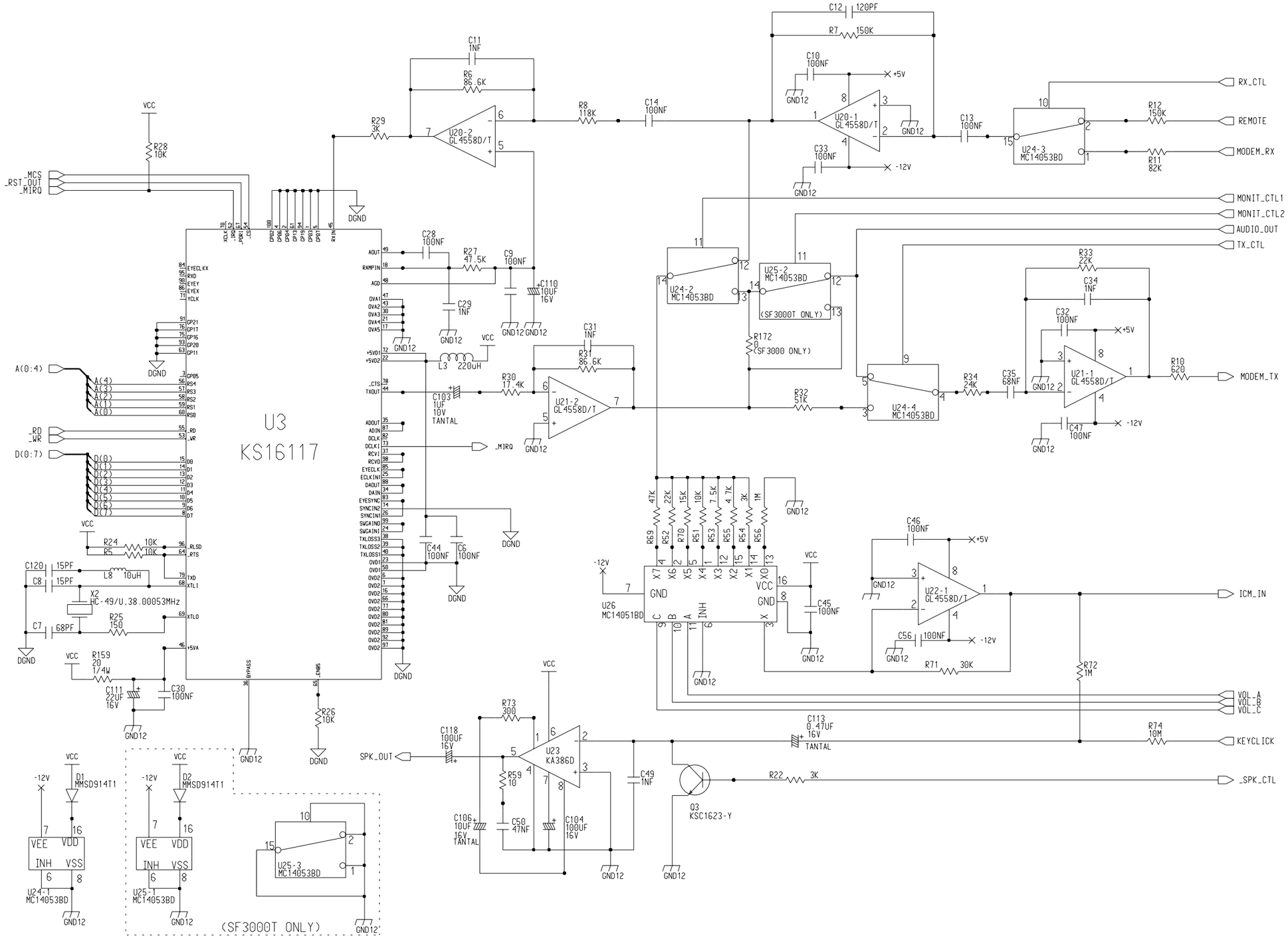




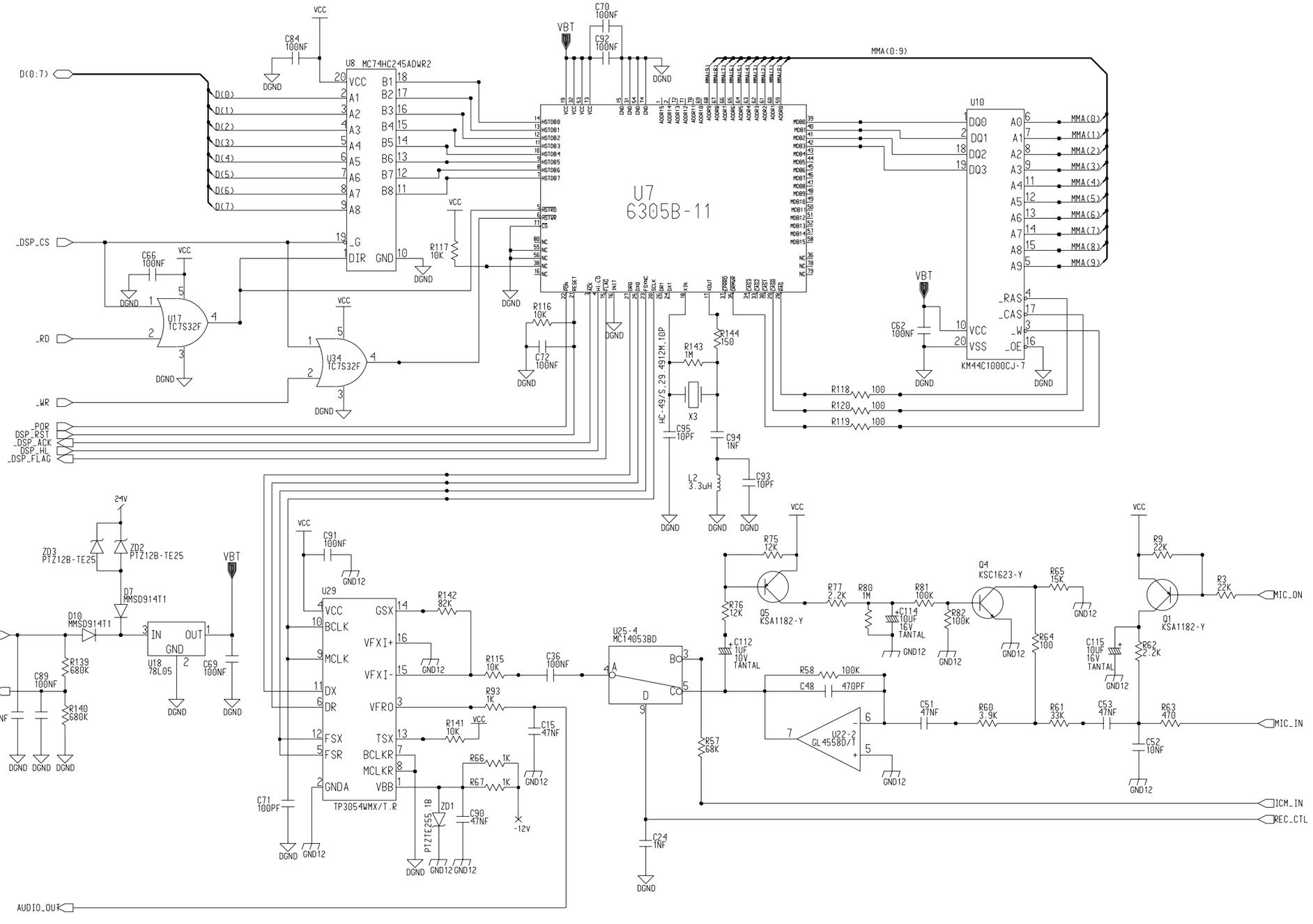




Modem

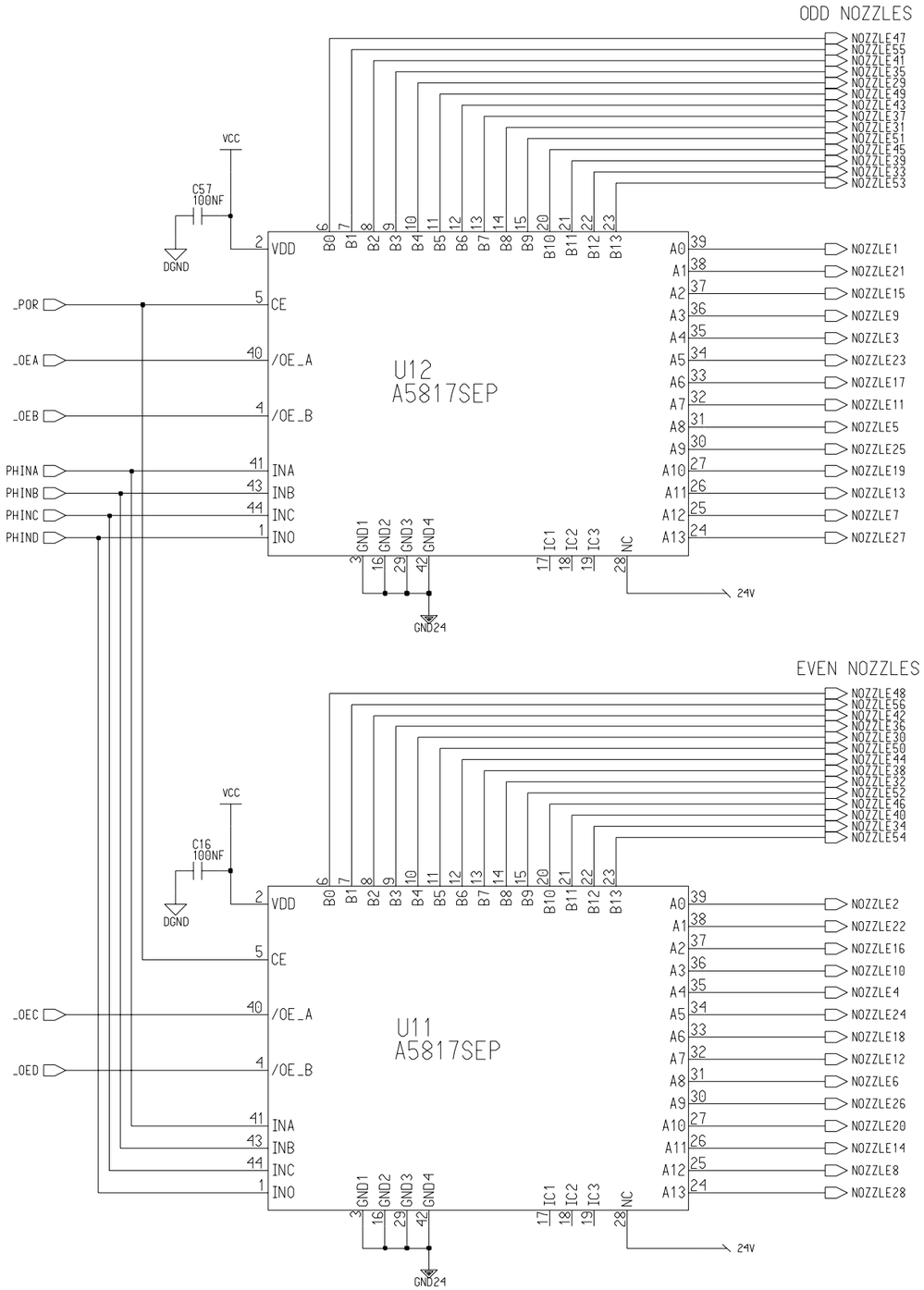

U3
KS16117
VCC
R28 10K
_MCS
_RST_OUT
_MIRQ
DGND
C11 1NF
R6 86.6K
R29 3K
U20-2 GL4558D/T
R8 118K
C14 100NF
C12 120PF
R7 150K
C10 100NF
+5V
GND12
U20-1 GL4558D/T
C13 100NF
C33 100NF
-12V
U24-3 MC14053BD
R12 150K
R11 82K
RX_CTL
REMOTE
MODEM_RX
MONIT_CTL1
MONIT_CTL2
AUDIO_OUT
TX_CTL
C28 100NF
R27 47.5K
C9 100NF
C110 10UF 16V
C29 1NF
L3 220uH
C31 1NF
R31 86.6K
R30 17.4K
C103 1UF 10V TANTAL
U21-2 GL4558D/T
_MIRQ
U24-2 MC14053BD
U25-2 MC14053BD
(SF3000T ONLY)
R172 0 (SF3000 ONLY)
R32 51K
U24-4 MC14053BD
R33 22K
C34 1NF
C32 100NF
U21-1 GL4558D/T
R34 24K
C35 68NF
R10 620
MODEM_TX
C47 100NF
A(0:4)
_RD
_WR
D(0:7)
R24 10K
R25 10K
_RLSD
_RTS
C120 15PF
C8 15PF
L8 10uH
X2 HC-49/U.38.00053MHz
C7 68PF
R25 150
TXD
XTLI
XTLO
+5VA
R159 20 1/4W
C111 22UF 16V
C30 100NF
BYPASS
ENMS
R26 10K
C44 100NF
C6 100NF
R69 47K
R52 22K
R70 15K
R51 10K
R53 7.5K
R55 4.7K
R54 3K
R56 1M
U26 MC14051BD
C45 100NF
C46 100NF
U22-1 GL4558D/T
C56 100NF
R71 30K
R72 1M
ICM_IN
VOL_A
VOL_B
VOL_C
R73 300
C118 100UF 16V
U23 KA386D
R59 10
C50 47NF
C106 10UF 16V TANTAL
C104 100UF 16V
C49 1NF
SPK_OUT
C113 0.47UF 16V TANTAL
R74 10M
KEYCLICK
R22 3K
_SPK_CTL
Q3 KSC1623-Y
D1 MMSD914T1
D2 MMSD914T1
U24-1 MC14053BD
U25-1 MC14053BD
U25-3 MC14053BD
(SF3000T ONLY)

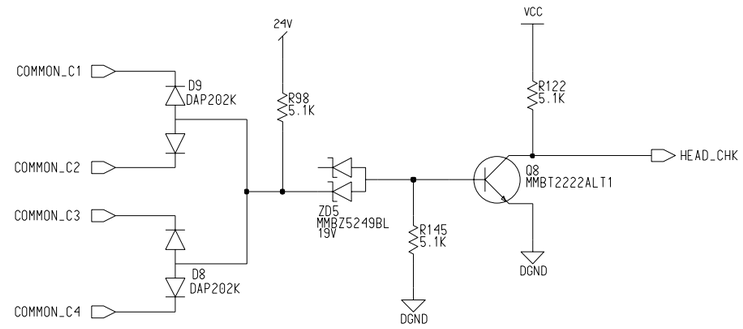
DSPG

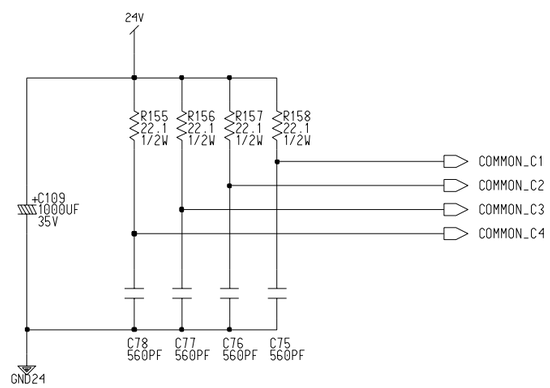


(SF3000T ONLY)

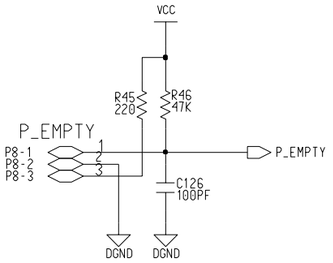
Head Driver

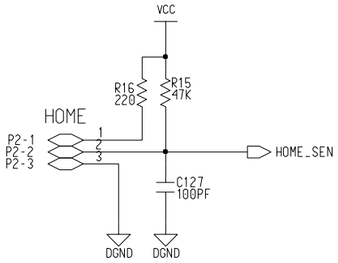

ODD NOZZLES
NOZZLE47
NOZZLE55
NOZZLE41
NOZZLE35
NOZZLE29
NOZZLE49
NOZZLE43
NOZZLE37
NOZZLE31
NOZZLE51
NOZZLE45
NOZZLE39
NOZZLE33
NOZZLE53
VCC
C57
100NF
DGND
U12
A5817SEP
_POR
_OEA
_OEB
PHINA
PHINB
PHINC
PHIND
VDD
CE
/OE_A
/OE_B
INA
INB
INC
INO
B0
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
NOZZLE1
NOZZLE21
NOZZLE15
NOZZLE9
NOZZLE3
NOZZLE23
NOZZLE17
NOZZLE11
NOZZLE5
NOZZLE25
NOZZLE19
NOZZLE13
NOZZLE7
NOZZLE27
GND1
GND2
GND3
GND4
IC1
IC2
IC3
NC
24V
GND24
EVEN NOZZLES
NOZZLE48
NOZZLE56
NOZZLE42
NOZZLE36
NOZZLE30
NOZZLE50
NOZZLE44
NOZZLE38
NOZZLE32
NOZZLE52
NOZZLE46
NOZZLE40
NOZZLE34
NOZZLE54
VCC
C16
100NF
DGND
U11
A5817SEP
_OEC
_OED
VDD
CE
/OE_A
/OE_B
INA
INB
INC
INO
B0
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
NOZZLE2
NOZZLE22
NOZZLE16
NOZZLE10
NOZZLE4
NOZZLE24
NOZZLE18
NOZZLE12
NOZZLE6
NOZZLE26
NOZZLE20
NOZZLE14
NOZZLE8
NOZZLE28
GND1
GND2
GND3
GND4
IC1
IC2
IC3
NC
24V
GND24

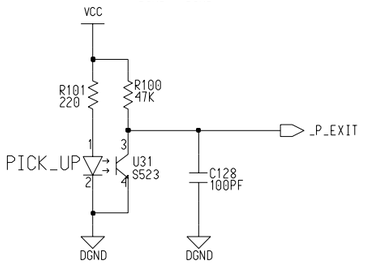

COMMON_C1
COMMON_C2
COMMON_C3
COMMON_C4
D9
DAP202K
D8
DAP202K
24V
R98
5.1K
ZD5
MMBZ5249BL
19V
R145
5.1K
VCC
R122
5.1K
Q8
MMBT2222ALT1
HEAD_CHK
DGND
DGND

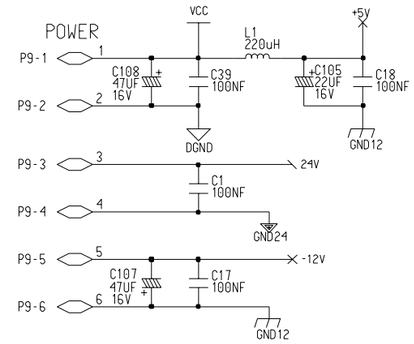

24V
R155
22.1
1/2W
R156
22.1
1/2W
R157
22.1
1/2W
R158
22.1
1/2W
+C109
1000UF
35V
C78
560PF
C77
560PF
C76
560PF
C75
560PF
COMMON_C1
COMMON_C2
COMMON_C3
COMMON_C4
GND24

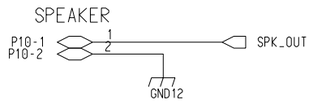
Connector


VCC
R45 220
R46 47K
P_EMPTY
P8-1
P8-2
P8-3
P_EMPTY
C126 100PF
DGND
DGND

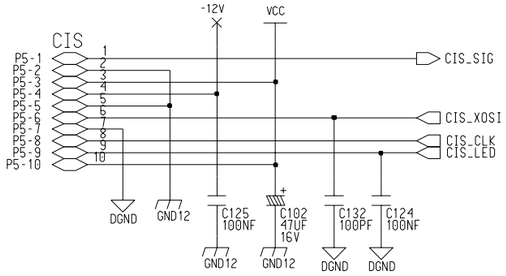

VCC
R16 220
R15 47K
HOME
P2-1
P2-2
P2-3
HOME_SEN
C127 100PF
DGND
DGND


VCC
R101 220
R100 47K
PICK_UP
U31
S523
_P_EXIT
C128 100PF
DGND
DGND

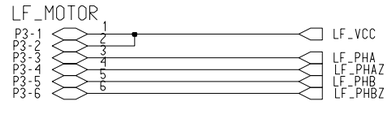

POWER
VCC
+5V
L1 220uH
P9-1
C108 47UF 16V
C39 100NF
+C105 22UF 16V
C18 100NF
P9-2
DGND
GND12
P9-3
24V
C1 100NF
P9-4
GND24
P9-5
-12V
C107 47UF 16V
C17 100NF
P9-6
GND12

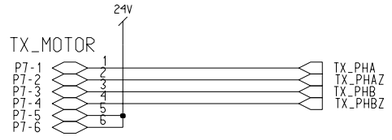

SPEAKER
P10-1
P10-2
SPK_OUT
GND12

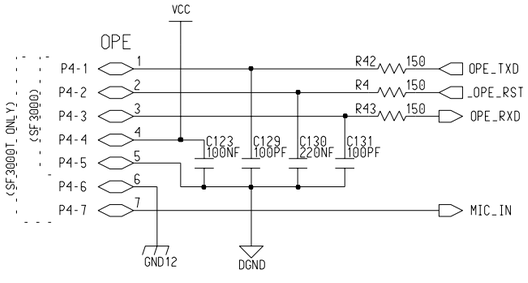
BAT
P13-1
P13-2
BAT_+9V
DGND
(SF3000T ONLY)


CIS
-12V
VCC
P5-1
P5-2
P5-3
P5-4
P5-5
P5-6
P5-7
P5-8
P5-9
P5-10
CIS_SIG
CIS_XOSI
CIS_CLK
CIS_LED
DGND
GND12
C125 100NF
C102 47UF 16V
C132 100PF
C124 100NF
GND12
GND12
DGND
DGND

CR_MOTOR
P12-1
P12-2
P12-3
P12-4
CR_PHA
CR_PHAZ
CR_PHB
CR_PHBZ


LF_MOTOR
P3-1
P3-2
P3-3
P3-4
P3-5
P3-6
LF_VCC
LF_PHA
LF_PHAZ
LF_PHB
LF_PHBZ


TX_MOTOR
24V
P7-1
P7-2
P7-3
P7-4
P7-5
P7-6
TX_PHA
TX_PHAZ
TX_PHB
TX_PHBZ


OPE
VCC
(SF3000T ONLY)
(SF3000)
P4-1
P4-2
P4-3
P4-4
P4-5
P4-6
P4-7
R42 150
R4 150
R43 150
OPE_TXD
_OPE_RST
OPE_RXD
C123 100NF
C129 100PF
C130 220NF
C131 100PF
MIC_IN
GND12
DGND

HEAD_1
00-6232-030-807-800
COMMON_C3
NOZZLE55
NOZZLE53
NOZZLE51
NOZZLE33
NOZZLE39
NOZZLE45
NOZZLE49
NOZZLE47
NOZZLE43
NOZZLE41
NOZZLE37
NOZZLE35
NOZZLE31
NOZZLE29
NOZZLE25
NOZZLE23
NOZZLE19
NOZZLE17
NOZZLE13
NOZZLE11
NOZZLE9
NOZZLE7
NOZZLE5
NOZZLE3
NOZZLE1
COMMON_C1
NOZZLE15
NOZZLE21
NOZZLE27
P11-1
P11-2
P11-3
P11-4
P11-5
P11-6
P11-7
P11-8
P11-9
P11-10
P11-11
P11-12
P11-13
P11-14
P11-15
P11-16
P11-17
P11-18
P11-19
P11-20
P11-21
P11-22
P11-23
P11-24
P11-25
P11-26
P11-27
P11-28
P11-29
P11-30

HEAD_2
00-6232-030-807-800
NOZZLE28
NOZZLE22
NOZZLE16
COMMON_C2
NOZZLE2
NOZZLE4
NOZZLE6
NOZZLE8
NOZZLE10
NOZZLE12
NOZZLE14
NOZZLE18
NOZZLE20
NOZZLE24
NOZZLE26
NOZZLE30
NOZZLE32
NOZZLE36
NOZZLE38
NOZZLE42
NOZZLE44
NOZZLE48
NOZZLE50
NOZZLE46
NOZZLE40
NOZZLE34
NOZZLE52
NOZZLE54
NOZZLE56
COMMON_C4
P6-1
P6-2
P6-3
P6-4
P6-5
P6-6
P6-7
P6-8
P6-9
P6-10
P6-11
P6-12
P6-13
P6-14
P6-15
P6-16
P6-17
P6-18
P6-19
P6-20
P6-21
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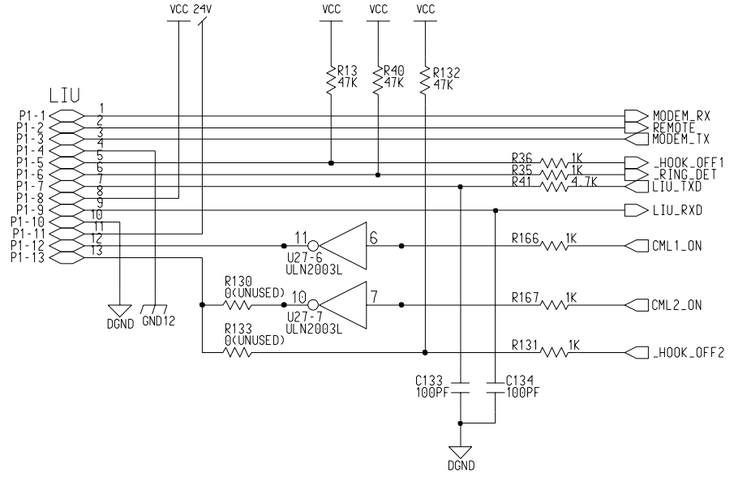
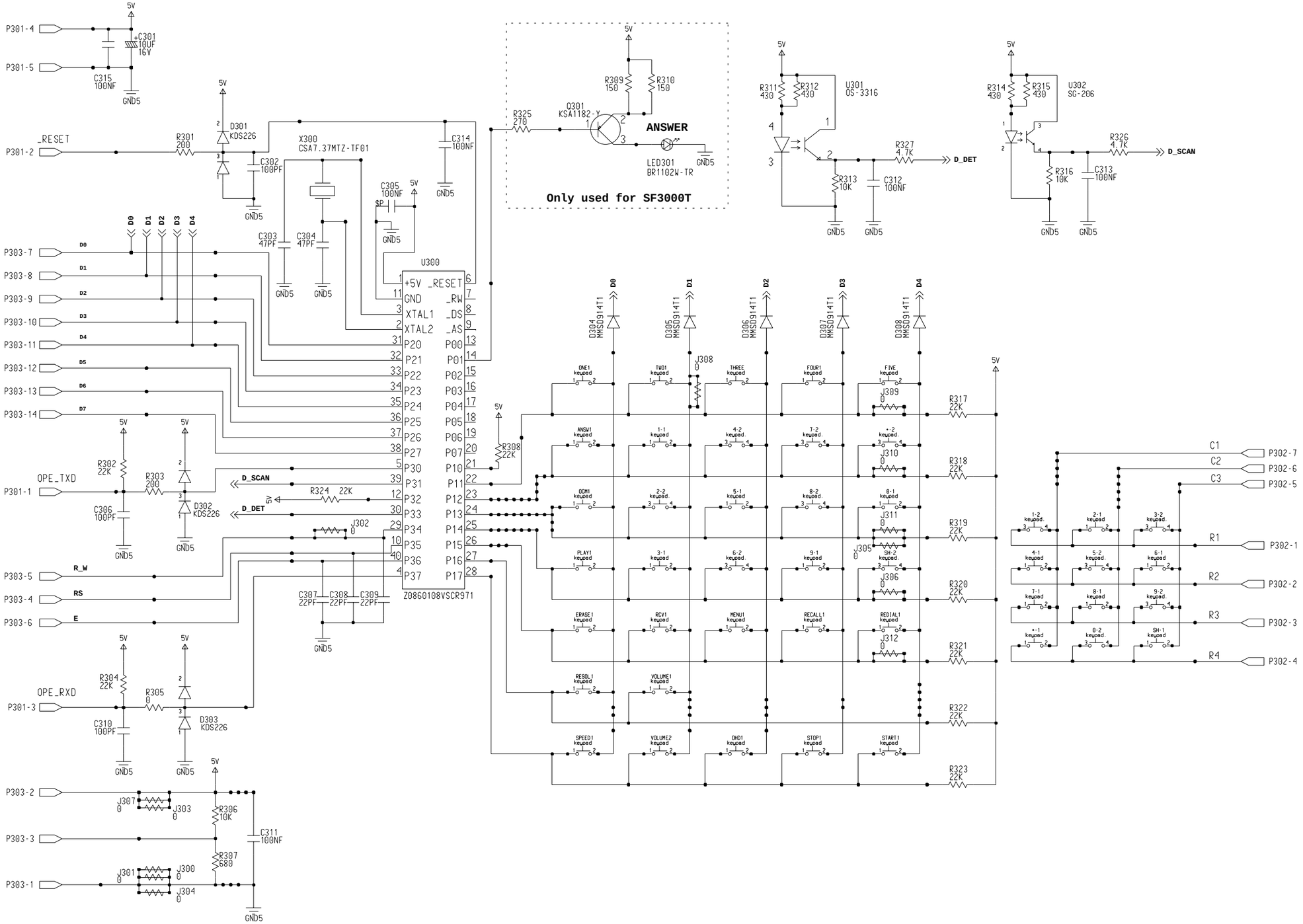
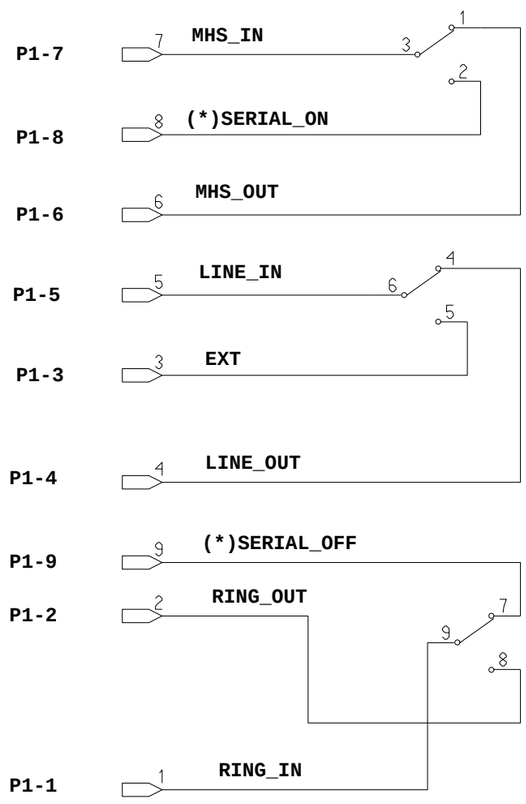
P6-23
P6-24
P6-25
P6-26
P6-27
P6-28
P6-29
P6-30


VCC 24V
VCC
VCC
VCC
R13 47K
R40 47K
R132 47K
LIU
P1-1
P1-2
P1-3
P1-4
P1-5
P1-6
P1-7
P1-8
P1-9
P1-10
P1-11
P1-12
P1-13
MODEM_RX
REMOTE
MODEM_TX
R36 1K
R35 1K
R41 4.7K
_HOOK_OFF1
_RING_DET
LIU_TXD
LIU_RXD
U27-6 ULN2003L
R166 1K
CML1_ON
R130 0(UNUSED)
U27-7 ULN2003L
R167 1K
CML2_ON
R133 0(UNUSED)
R131 1K
_HOOK_OFF2
DGND
GND12
C133 100PF
C134 100PF
DGND

12-2. OPE Circuit Diagram

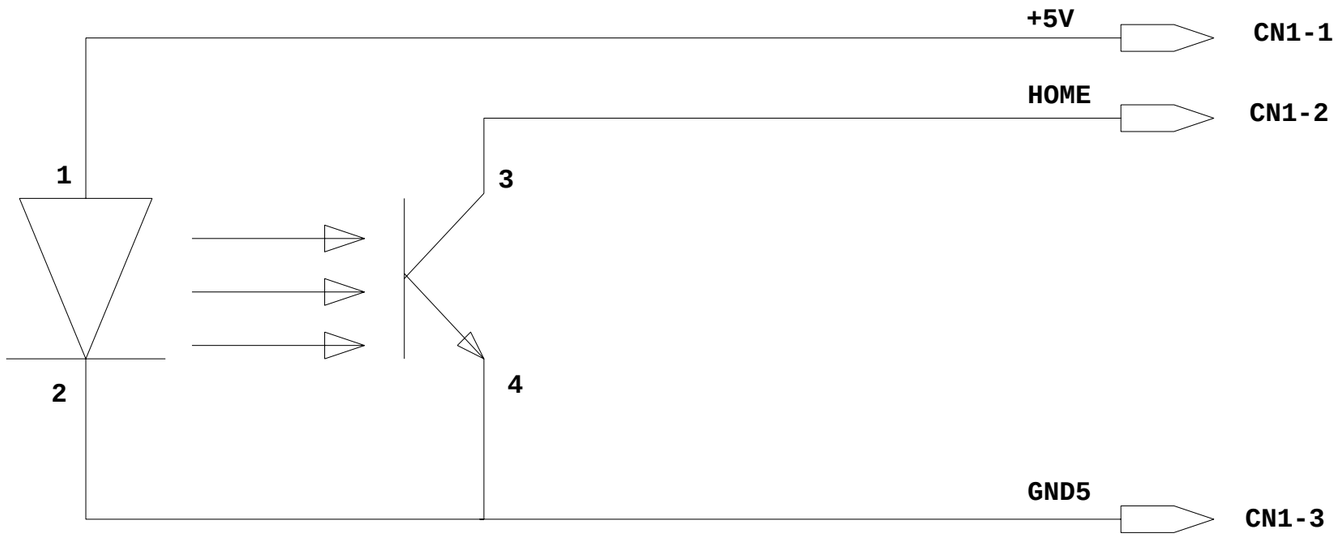


12-3. Hook Circuit Diagram

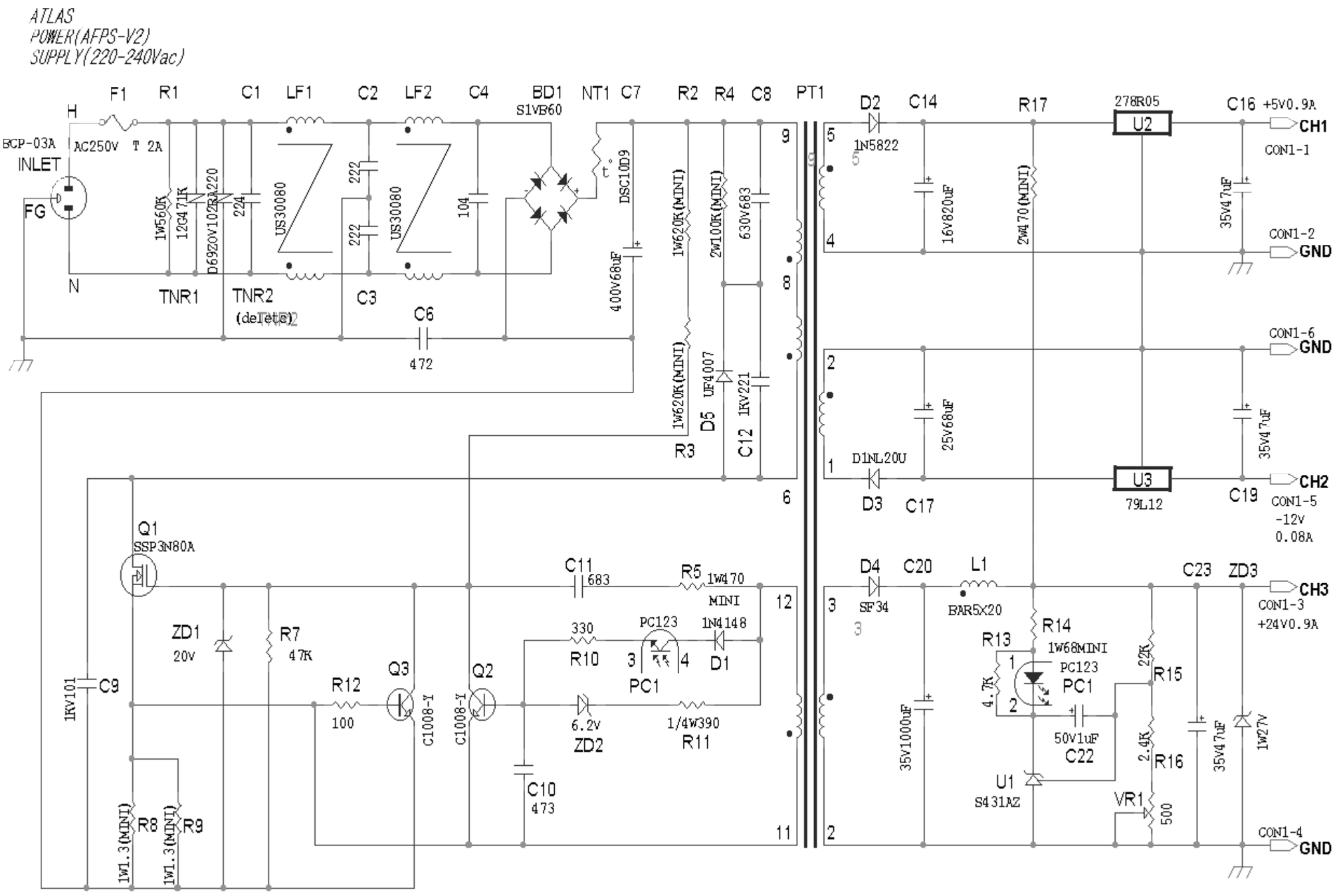


(*) IS FOR ITALY

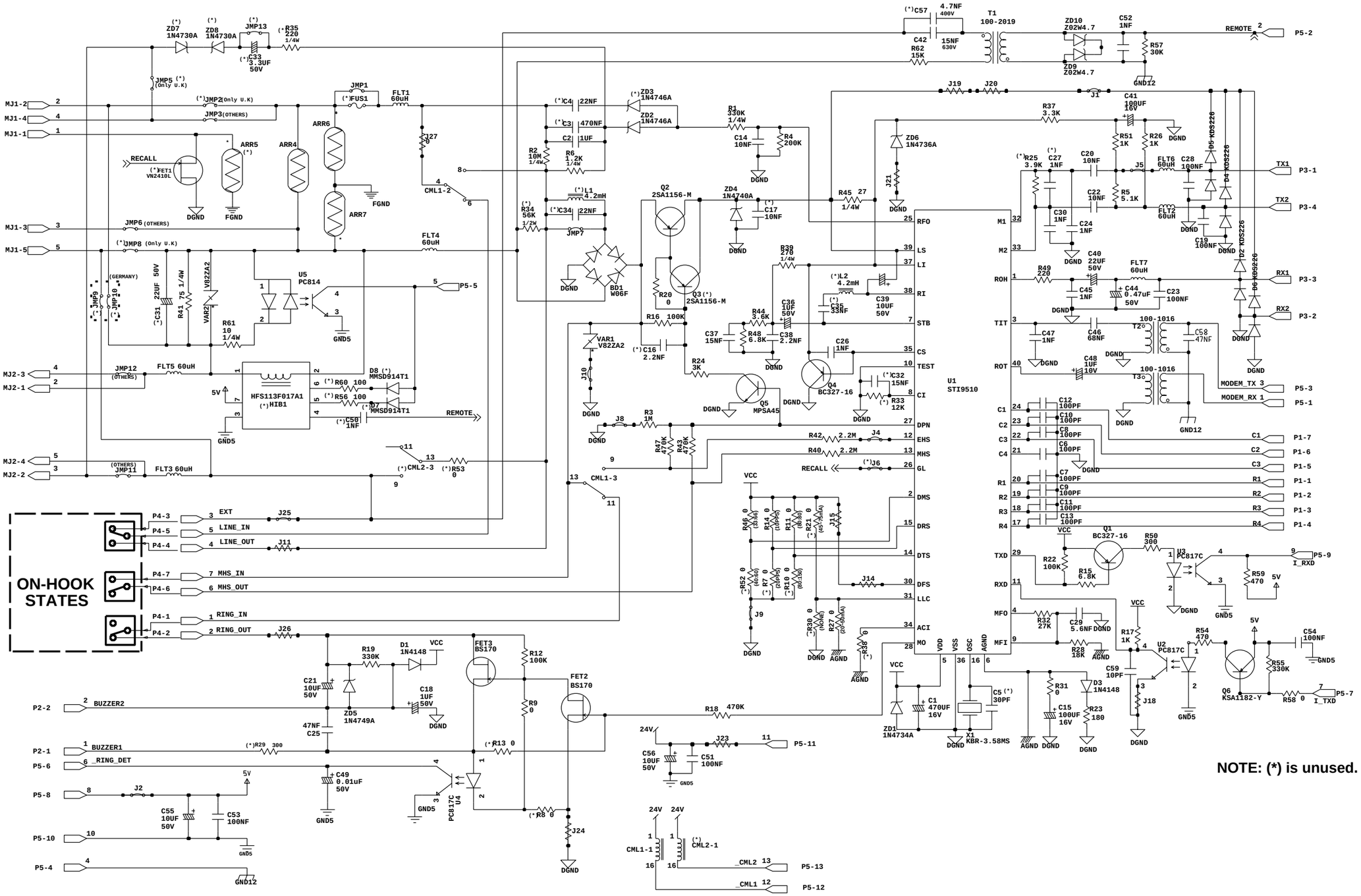
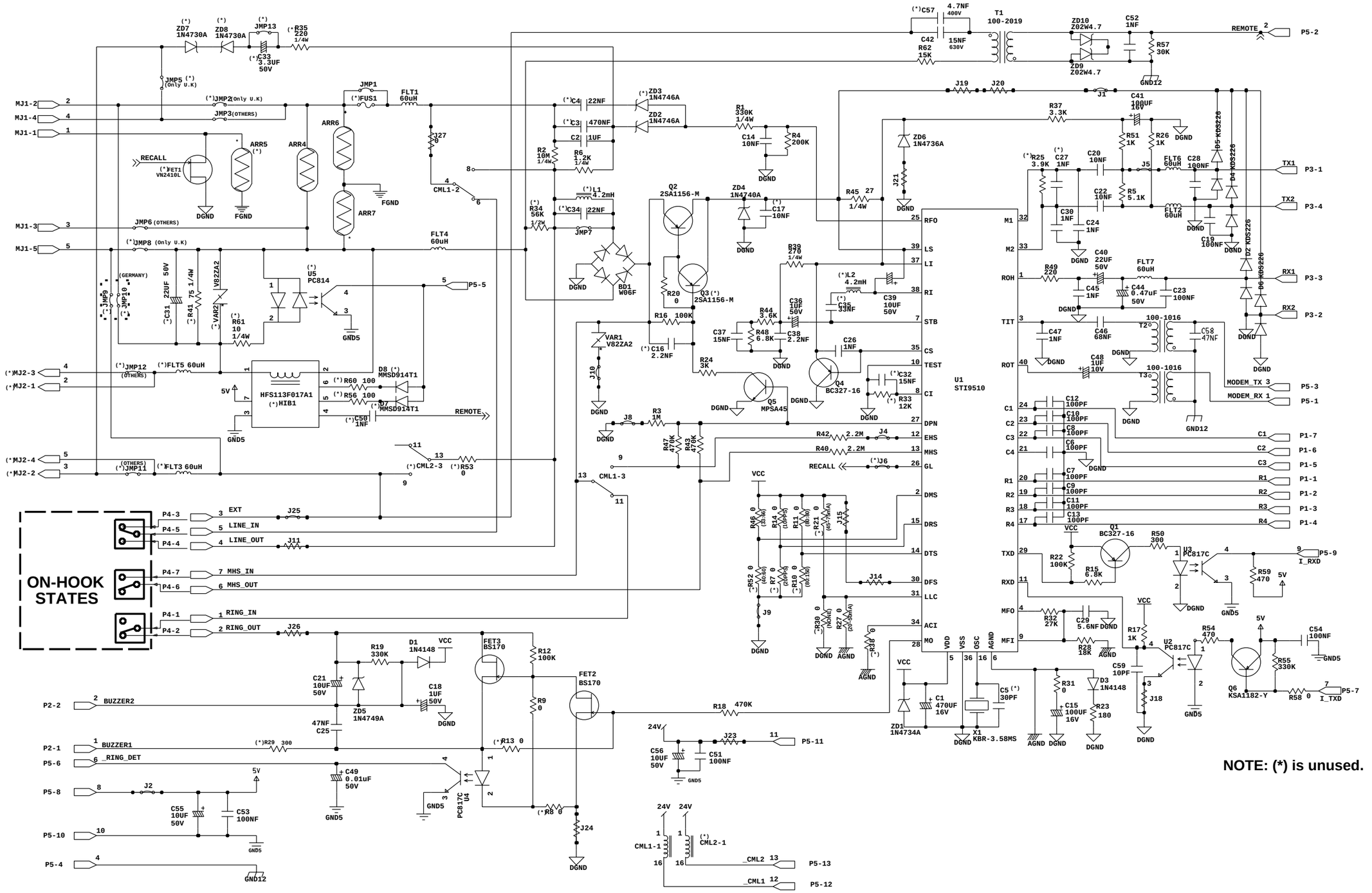
12-4. Home Circuit Diagram



12-5. AFPS-V2 (1)


ATLAS
POWER(AFPS-V2)
SUPPLY(220-240Vac)
F1
R1
C1
LF1
C2
LF2
C4
BD1
S1VB60
NT1
C7
R2
R4
C8
PT1
D2
C14
R17
278R05
U2
C16
+5V0.9A
CH1
CON1-1
CON1-2
GND
1N5822
16V820uF
2W470(MINI)
35V47uF
BCP-03A
INLET
AC250V T 2A
FG
N
H
1W560K
12G471K
D69Z0V102KA220
224
US30080
222
222
US30080
104
DSC10D9
400V68uF
1W620K(MINI)
2W100K(MINI)
630V683
TNR1
TNR2
(delete)
C3
C6
472
1W620K(MINI)
R3
D5
UF4007
C12
1RV221
CON1-6
GND
D1NL20U
D3
C17
25V68uF
U3
79L12
C19
35V47uF
CH2
CON1-5
-12V
0.08A
Q1
SSP3N80A
C11
683
R5
1W470
MINI
330
R10
PC123
1N4148
D1
PC1
ZD1
20V
R7
47K
R12
100
Q3
Q2
C1008-Y
C1008-Y
6.2V
ZD2
1/4W390
R11
C10
473
1RV101
C9
1W1.3(MINI)
R8
1W1.3(MINI)
R9
D4
C20
L1
SF34
BAR5X20
C23
ZD3
CH3
CON1-3
+24V0.9A
R14
1W68MINI
R13
4.7K
PC123
PC1
22K
R15
2.4K
R16
50V1uF
C22
35V1000uF
U1
S431AZ
VR1
500
35V47uF
1W27V
CON1-4
GND

3. CIRCUIT DIAGRAM - SF3000 LIU PBA



SF3000T LIU PBA